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# Life in the Digitalge

buying digital devices

the e-cash future

Test Centre digit August 2001

13 Digital Cameras,
8 Portable MP3 Players,
34 Speakers for your PC

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# Dotcom(e), Dotgo



"...the implosion of so many dotcoms over the last year seems to have replaced the excessive optimism with an amazing amount of negativity"

Doesn't anyone believe in the Internet anymore?

Well, stock markets all over the world don't seem to. And venture capitalists nowadays don't seem to have much confidence in the Internet either. Add to this the fact that some of the most popular Web sites have had to shut down their services and free e-mail services are turning commercial.

Is Web content going to remain free? Are any of today's popular Web communities going to be around one year from now? Questions like these seem to dominate our thoughts.

But just look beyond these seemingly larger doubts and it is obvious that Internet usage has been increasing consistently all over the world. More people are spending more time on the Internet. This is primarily because it provides them with a relatively inexpensive means to communicate.

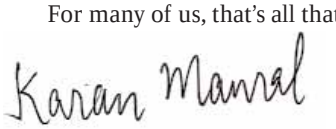
However, the implosion of so many dotcoms over the last year seems to have replaced the excessive optimism with an amazing amount of negativity.

Despite any misgivings that might have been created due to the discontinuation of free e-mail services by USA.net and 123India.com, other free e-mail services will always be available. While it is possible that some e-mail service providers will decide that continuing those free services no longer makes 'business sense', it is probable that many others will realise that they have to continue to provide these services to keep traffic coming to their sites. The Microsoft acquisition of Hotmail a few years ago is an example of how free e-mail services helped to increase the popularity of their MSN portal.

The Web also provides people with a means to share their ideas with others. This is unique because it makes it possible to publish and distribute content at a negligible cost. Several Web sites like Anandtech.com and Rediff.com have used the opportunity that this accessible medium of mass communication provides to become tremendously popular and successful media entities. Quite obviously this doesn't guarantee that every Internet property will be successful.

But what the Internet does provide in ample measure is the opportunity for both individuals and businesses to do much more than was ever thought possible. It helps to create an environment in which our talents and ability can pave the way for our success.

For many of us, that's all that we ask for.



Karan Manral
Assistant Editor
karan_manral@jasubhai.com

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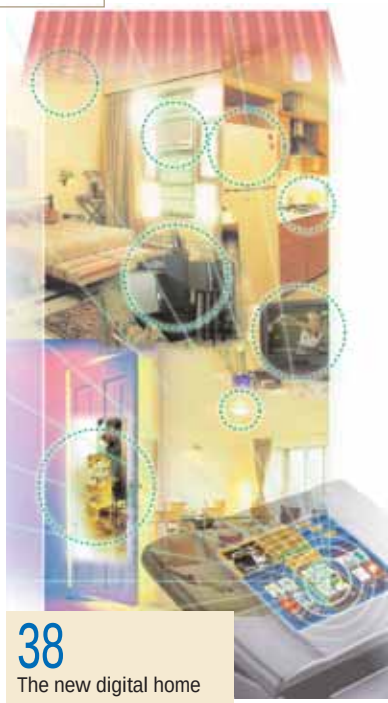
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Wanna be a multimedia programmer?



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Cloning your hard disk




digit interactive

## ON THE CD

# Mindware

### RESOLVE
**TROUBLESHOOTING**

FAQs on partitioning your hard disk

### WORKSHOP

Hands-on: A video workshop on working with multiple devices

### E-PAPERS

Working with PDFs and eBooks

### SOFTWARE
**DEVELOPERS**

**PTOLEMY II**

A set of Java packages that support concurrent modelling and design with sample models of calculation such as discrete event systems, dataflow, process networks etc.



**TANGO 2000 DEVELOPMENT STUDIO**

A complete Web application development software with features such as drag and drop interface, e-commerce capabilities, XML implementation and more.

### GRAPHICS
**ARTICONS 2.5**

A powerful imaging tool that allows you to create and edit icon images as well as manage icon files and libraries. Real cool stuff!

**EXPRESS THUMBNAIL CREATOR**

This program has an easy to use, wizard style interface and allows you to quickly create HTML image galleries with thumbnails.

### HOME
**SONG SPY 2.0**

A new music sharing program that even rewards users with prizes via its breakthrough Karma system.



**DIRECT DVD**

A full featured DVD player for Windows that offers MPEG-2 video support.

## Software on CD

### Mindware
**DEVELOPERS**

ActivePerl Build 616 (Freeware), Iraje Visual Suite (Trialware)

**HOME**

Effective Desktop Build 204 (Freeware), KaZaA Media Desktop (Freeware), TypingMaster 99 (Full working model), WinFM (Shareware)

**IN MAGAZINE**

Cakewalk Pro 9 (Demo), Cool Edit (Shareware), Cubase VST (Demo), Evolution Audio Pro (Demo), GoldWave (Shareware), Midi Maestro (Demo), Wave Flow (Shareware), Wave Lab 3 (Demo)
32bit Web Browser (Shareware), Enigma Browser (Freeware), Internet Explorer (Freeware), K-Meleon (Freeware), Mozilla (Freeware),

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MSN Explorer (Freeware), NeoPlanet (Freeware), Netscape Communicator (Freeware), Netscape (Freeware), Opera (Freeware), WebHunter Power Browser (Freeware)

**OFFICE**
File Shredder 2000 (Trialware), G-Lock EasyMail (Trialware), Visual Day Planner (Shareware), WinTack (Trialware)

**INTERNET**
AllPicturez(Demo), ActivatorDesk (Freeware, Beta), Databites (Freeware), HTML Guard (Shareware)

**UTILITIES**
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**UPDATES**
AVG (Freeware), GetRight (Freeware), ICQ (Freeware)

**RESOURCES**
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**PLAYWARE**
**GALLERY**
Winamps, skins, trailers,

**GAMES**
American McGee's Alice (Demo), Art Is Dead (Demo), Cannon Smash (Freeware), Kyodai Mahjong (Demo), Motocross Mania (Demo), NBA Live 2001 (Demo), Road Wage (Demo), Summoner (Demo), Sydney 2000 (Demo)

**TYPING TUTOR 2002**
A family of Web applications and Web services that allow you to improve your typing abilities. Time to start clicking now

## INTERNET

**WEBCAMS TOURIST**
A specialised Web browser that comes with more than 750 pre-installed Web cams

**DATABITES**
This program allows you to capture and store content such as streaming media, dynamically generated and password authenticated data




**ACTIVATOR DESK**
This program runs on a powerful desktop database server with enhanced safety and security.

## IN MAGAZINE

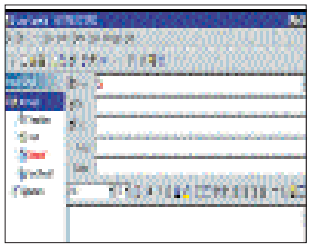
**SOUND FORGE 5.0**
An award winning two track digital audio editor that includes a powerful set of audio processes, tools and effects for manipulating wave audio



## OFFICE

**WINTACK 3.0**
A free form sticky notes application that allows you to keep a personal diary, journal or log and comes with a number of features such as password protection, search and a built in calculator

**G-LOCK EASY MAIL 3.1**
An e-mail marketing software that allows you to run and manage mailing lists, newsletters, announcement lists and customer updates



## UPDATES

**DOWNLOAD ACCELERATOR 5.0**
This latest version includes a toolbar that integrates with Internet Explorer, a file lecher, downloadable link highlighter and more

## UTILITIES

**MODEM BOOSTER**
Enhance your Windows 95/98/2000/Me/NT Internet settings for faster browsing, file downloads and e-mailing

**CLOCK G2**
A flexible time piece for Windows that features five configurable clock faces

## IN PRINT

### A LIST
Best performing hardware and software products under various categories

### PRICEWATCH
Computer component prices for your reference

## STARTING ON ACCESS 2000
Tutorial for end-users

Complete, free course from GurukulOnline

## MINDMATTERS

### EBOOKS
*Wanderings*, *The Stone Pithan*, *Just Stories* and more

### WHITEPAPERS
A collection of whitepapers on the Intel Itanium processor

## TIPS & TRICKS
Compilation of various Tips & Tricks

Sponsored by SAMSUNG

# Playware

## GALLERY
The usual suspects of wallpapers, screensavers, themes and WinAmp skins

## ARENA

### GAMES

**METAL GEAR SOLID**
Infiltrate a nuclear weapons disposal facility captured by terrorists, rescue the hostages and prevent a nuclear launch before time runs out!

## SURGE
Featuring music by *Awesome Presence*, *Digital Explosion* and *Jazzperience* and the latest movie trailers including some of your favourite Hindi movies

## CONNECT

### SITEMAP
Have some fun and laughs with masti.com

### INDIA SITES
New Indian sites and ISP news

### NEWSLETTERS
A bunch of newsletters with useful information on handheld devices

### BOOKMARKS
The latest Hindi and English movie reviews with these star-crossed sites

### DROOLMAAL
An eye catching assortment of products



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DIGIT INTERACTIVE

Contact Vaibhav Kapoor, Content Co-ordinator, Multimedia *(cdcontent@jasubhai.com)* for inclusion of software on Digit Interactive. A write-up detailing the features of the software, complete loading instructions and a letter certifying that the product is original must accompany the software. The software must also have the complete address, telephone number and e-mail of the developer.

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# NEWS PULSE



## hypethesis

### DAI

**▲What is it?**

Distributed Artificial Intelligence (DAI) is a sub-field of Artificial Intelligence that investigates the behaviour of societies of artificial agents (high level, interacting computer programs). These systems can also be defined as co-operative systems, where a set of agents act together to solve a given problem. These agents are often heterogeneous (for example, in a Decision Support System, the interaction takes place between a human and an artificial problem solver).

**▲What is the technology?**

DAI systems are based on different technologies, for instance, distributed expert systems, planning systems or blackboard systems. What is new in the DAI community is the need for methodology for helping in the development and maintenance of DAI systems.

**▲Where do I get more information on it?**

www.info.fundp.ac.be/~pys/ModelAge/prop/tableofcontents2_1.html

### SNAPSHOT

**Online use unaffected**

Even after the massive dotcom burst

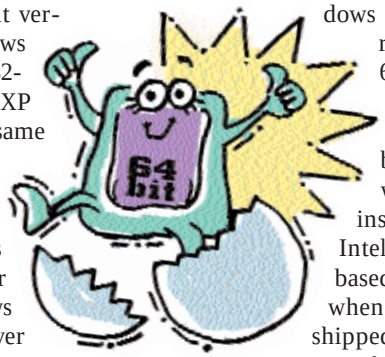
The number of U. S. employees who had their Internet or e-mail usage monitored

**14 million**

***Source:*** *www.cnn.com*

## A non-beta 64-bit Windows Version

Come October 25, 2001 and Microsoft will be shipping a non-beta 64-bit version of Windows along with the 32-bit Windows XP release on the same day.




The Windows pre-release versions due in October are the Windows Advanced Server Limited Edition version 2002 (pre-release 64-bit Windows 2002) and the 64-bit version of Windows XP (pre-release 64-bit Windows XP). These 64-bit versions will be installed on Intel's Itanium based systems when they are shipped. Trust Microsoft to know where the money lies!

## Linux-powered Palm

Calling all Linux lovers! How about having a Linux compatible OS inside your Palm IIIx or Palm IIIxe? No, this is not a dream.

Empower technologies has come out with Linux DA, an embedded Linux DA O/S v1.0, which will work on Palm IIIx/ IIIxe handhelds. It is basically a Linux compatible OS scaled down for the Motorola Dragonball CPU used in Palm handhelds. The OS is designed to completely replace the proprietary Palm OS on the Palm IIIx/ IIIxe models. It claims to have no compatibility problems with the Palm IIIx/ IIIxe hardware. A demo version of Linux DA is available from www.linuxda.com. This version has an address book, scheduler, calculator and games.

## Licensing fee for downloads?

That's the road software downloads are going to take if E-Data Systems has its way.

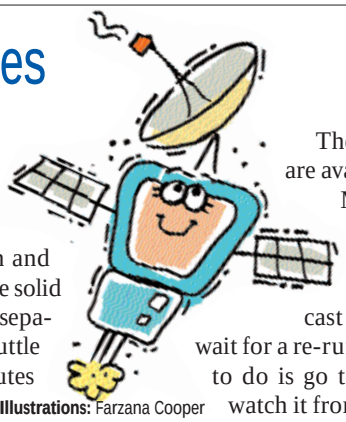
E-Data had patented a system for reproducing information in material objects at a point of sale location back in 1985. Now E-Data wants its share of the pie!

In March 1999, E-Data had lost the case filed against majors like CompuServe and Ziff-Davis publishing in a lower court. The court had ruled that E-Data's patent applies only to data downloaded to systems such as interactive kiosks, CDs, paper, etc and does not apply to software downloads. Now the Federal Circuit U.S Court of Appeals has ordered the court to reconsider the scope of the patent more broadly. This means that all the sites that offer downloads will have to pay E-Data for the download. The site will effectively transfer this fee to the user and thus E-Data will be gaining money for each download we do.

## Download satellite launches

If you can watch it on TV, then why not on the Web? Kennedy Space Center's Web site has included downloadable videos of launches starting with the lift off of space shuttle Atlantis on July 12.

Video coverage of the launch will start as soon as the payload doors close, many days before the launch. The coverage will be available through the final countdown and the launch till the solid rocket boosters separate from the shuttle about two minutes into the flight.



**Illustrations:** Farzana Cooper

These video clips are available in RealMedia format. No more problems of missing a telecast or having to wait for a re-run. All you need to do is go to the site and watch it from the archives.

➜

◆ Taliban bans Internet ◆ Mobile phone makers to publish radiation levels ◆ Justice department says rein in Microsoft soon

# Linux Standard base 1.0.0

At last! A move to bring all the warring Linux groups under one roof. The Linux Standard Base 1.0.0 specification is finally available for review by developers.

Right now, distributors like RedHat, Caldera, SuSE, etc, use the basic Linux kernel along with their own non-standard applications and standards based software around it. These differences in distributions create major problems for the developers who have to program around them.

Many a time, these incompatibilities cause feelings that Linux is an OS that only 'techies' can use. This is a big stumbling block in the wide spread acceptance of Linux.

Linux Standard Base 1.0.0 is expected to eliminate these problems and enable developers to more easily create software for Linux.

This standard is the collective effort of many software and hardware companies to create a base Linux operating system. This base standard has been designed with the goal of conforming to available standards. Some of the major players in this combined effort are Compaq, IBM, HP, Oracle, and RedHat.

# quicktake

Dr Albert R. R. Kooiman, Program Director, Telephony, Philips Processing.

**▲ What are the major products that Philips Speech Processing (PSP) is offering in India?**

The SpeechPearl family is integrated with third-party applications for speech processing applications such as directory assistance, Internet voice browsing, personal call assistant and controlling unified messaging.



Dr Kooiman
PROGRAM DIRECTOR
Speech Processing

SpeechMania acts as an interface for automated telephone transactions in applications such as voice portals using SpeechPearl. It acts like a virtual telephone operator for services like directory assistance, voice portals, etc.

SpeechWave has been intended for use in small to medium-sized vocabularies like regional languages.

**▲ What are the plans of PSP for India?**

Most of the R&D work in India is focused on improving the acoustic models used for speech processing. We have recently set up a voice portal in association with DSQworld.com. It makes use of Philips's virtual telephone operator for providing information services such as news via the telephone to users. The technology is based on a speech processor, which makes use of Indian English. We are also developing speech recognition for Hindi. We even have plans to make acoustic models for four more languages. We plan to establish a network of competent partners in India who will integrate our technologies into products and applications.

# Redalert

## Marijuana

Marijuana is an Internet worm crafted in Visual Basic. It installs itself as system32.exe in the default system folder (depending on the OS). The worm however fails to install if the OS is installed in a path or drive other than the default location. After making its entry into the registry, the worm modifies run keys and adds itself to the win.ini, to ensure that it's loaded every time the computer is booted. The worm stays as a service in the memory thereafter. The worm then opens the Outlook address book and sends itself to all the contacts. It also changes the Windows registered user name to "I am a pot head!" and the organisation into "Stoner's pot place". The worm stays as a bush-like icon in the system tray and when clicked displays a lengthy message urging the legalisation of pot smoking. To delete the worm, delete the system32.exe file from the Windows directory. The file would be locked in the Windows mode and hence has to be deleted via DOS mode.

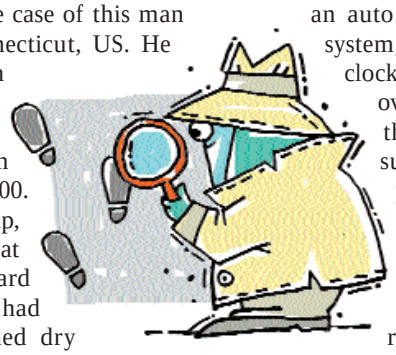
## Missworld

This mass mailing worm comes disguised as a Macromedia Flash movie. The mail comes to you with the subject line "Missworld". The body will read, "Enjoy the pictures of missworld from various countries" and carries attachments called either MWrld.exe, or Missworld.exe, or MWld.exe. The worm enters your Outlook address book and sends itself to all the contacts. It also adds a line to the Autoexec.bat instructing the computer to format C: drive upon reboot. McAfee has rated the worm a low risk one. Yet, erasing the hard disk means loss of valuable data. All the leading antivirus vendors have come up with patches, which will detect it. So get the latest updates for your antivirus program.

# Big brother's watching you

It sure seems so, considering that technologies like GPS are increasingly being used to monitor people without their knowledge.

Take the case of this man from Connecticut, US. He rented a van fitted with a GPS system in October 2000. After his trip, he found that his debit card account had been drained dry due to three $150 withdrawals. Acme Rent-a-Car, the car rental company, explained this by saying that he had speeded three times during his trip. The result was the three $150 fines per speeding.



Acme had installed AirIQ, an auto navigational system, which clocked him at over 90 mph in three areas. He sued the company and received a ruling in his favour. This incident has raised concerns that technology is being misused against its user. Is 1984 going to happen after all? ➜

◆ AMD in second-quarter free fall ◆ Hopeful signs emerge for technology spending upturn ◆ PC sales fall for first time in years

## realitybites

*"These two new speeds enable a broader range of performance and price points for our customers"*



**Louis Burns,** vice president and general manager, Intel Desktop Platforms Group at the launch of the 1.8 and 1.6 GHz Pentium 4s

Forget the benchmarks. When it comes to processor clock speeds, it is the Pentium that rules!

*"At the very least I'd think that would put us in the top 10"*



**Tsugio Makimoto,** chief technology officer, Sony Semiconductor Network commenting on how digital consumer products are offering new opportunities for the company

Hamara number aayega!

*"We believe that this order is at odds with the appeals court ruling in February and threatens all peer-to-peer file sharing"*



**Hank Barry**, CEO, Napster on the court order restraining Napster's file-sharing services

Let's see if there's a way to get the free goodies back

## I'll kill for net access

Sounds too far fetched? A university student was recently arrested in Bangkok for killing a young woman. He wanted the money for paying off an Internet café debt.

The culprit is 22-year-old Witchapat Permjaturas, a computer science student at Ramkhamhaeng University. He killed 28-year old Patcharin Nanammuang for settling a 2,000 baht debt that he owed in a cyber café.

On December 14, 2000 he broke into the young woman's apartment. While looking for money and valuables, the woman woke up and tried to resist him. In the struggle that followed, he stabbed her, resulting in her death. It took nearly six months before the police could catch him. The police got on to his tracks from his blood stained clothes and the footprints he had left behind in the apartment.

Addictions, even cyber addictions are dangerous affairs, you see!

## Embedded notes

Hitachi has developed an unbreakable chip thinner than a strand of hair, making it possible to be embedded in paper.

Data stored on the chip can be accessed using a device similar to a bar code reader. This capability to store identification numbers enables its use for the protection of currency notes, cheques and other important documents against counterfeit and illegal copies. It can also be used for tracking sales and market research.

## thermometer



### Hot

**Games**

*Tomb Raider* and *Final Fantasy* are released as movies

**E-authors**

Authors win a legal case on e-books for which they did not get royalties

### Cold

**Psion**

The company has stopped production of consumer handhelds, restricting itself to corporate markets

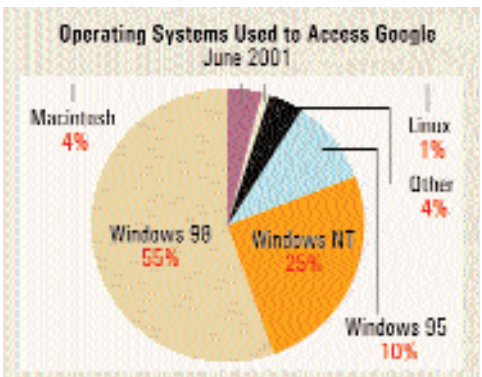
**Internet World, Chicago**

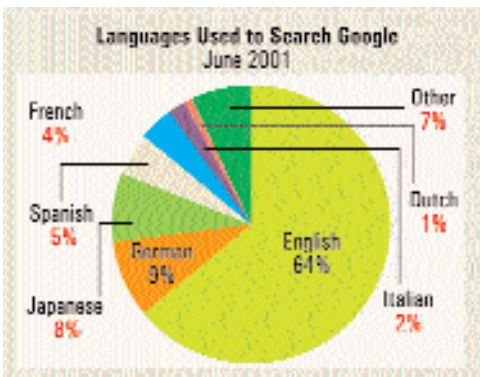
Visitor turnout at Internet World reflected the state of mind brought about by the Dotcom bubble burst

## thumbnail

### Usage of Google

Google is your favourite search engine for sure. Let's look at the systems and profiles of people using Google for their search requests




Source: www.google.com

◆ Toshiba guns for Palm with enterprise-level Pocket PC ◆ Pennsylvania company to list clinical trial data on Yahoo! Health

## Metrics

**$44 million**

was spent on streaming media enabled advertising in 2000.

Worldwide revenues from e-recruiting in 2000 was

**$1.6 billion**

*Source: www.idg.net*

## R.I.P. the Power Mac G4 cube

All you Mac fans, there's sad news coming your way. Apple is discontinuing production of the Power Mac G4 cube due to lack of demand. The 8-inch cube, which was launched last July, is almost one-fourth the size of the Power Mac G4.

Apple says that the sales of G4 cube were not enough to justify sustaining it. In fact, the sales were far lower than what the company had expected. Most customers go in for the more powerful Power Mac G4 mini towers than the G4 cube.

Of course, you can continue to hope that the G4 cube will be back in a new upgraded avatar. But as of now, Apple doesn't have any plans to do so in the near future.

## XP Smart tag—not so smart!

Microsoft has announced that Windows XP will not be carrying Smart Tag technology—a result of the negative public reaction to this feature. However, Office XP will still be having this feature. Smart Tag technology links users to Web sites chosen by Microsoft even when they are on sites other than Microsoft's.




This has caused widespread apprehension that sites other than those favoured by Microsoft will be neglected. Online browsing could become very Microsoft-centric if this is incorporated into the operating system. Trust good old Bill to have a finger in every pie!

## Online funerals?

What's the world's coming to? Now they've decided to put live broadcasting of funerals online as well.

EulogyCast, a company in the US has announced its live, private broadcasting services of funerals and memorials.

Shameful is not enough to describe it!

## Whois?

Ximian Mono

▲ *What is it?*

This is an initiative from the open source community to compete against Microsoft's .Net since Microsoft's position in the Internet area is as yet not considerable. .Net has several advanced features such as ASP.Net, that won't be available to ordinary developers on other platforms. Therefore, only Windows OS users can get the best experience, obviously something that the open source community doesn't want to happen!

Mono provides developers with a platform with which they can develop .Net compatible applications. These .Net applications can run on Windows or Mono supported platforms such as Linux and Unix.

▲ *Who is developing it?*

Ximian, who made the Gnome interface for Linux and Unix is behind Mono. Check out www.ximian.com.

▲ *When is it coming out?*

The tools and libraries of Mono are expected to be out by the first half of 2002.

## tomorrowstechnology

## Small is efficient

The question of how to connect molecular sized computers has been resolved by researchers from Hewlett-Packard. The solution, though conceptual, lies in making use of a kind of atomic pixie dust. Phil Kuekes and Stan Williams, both working at HP labs were awarded a US patent for the concept which involves throwing atomic dust, based on gold and other molecules, between the ends of nanowires and wires. Also included is a testing process that provides identities to the connections, making it easy to control them.

The group had already figured out ways to build molecular chips to store information and crunch data. Their next target, by 2005, is a 16 kilobit molecular memory chip that would hold 16,000 pieces of binary yes-or-no data. A small amount, but still large enough to make hooking up the molecular chip to the computer wires, a royal pain.

"Nanowires" are crystals of six to 10 atoms wide and two atoms tall and are essentially what the molecular chips are made of. Growing the crystals in parallel and laying them one above the other creates a grid. When energy is passed through the grid, a molecule that could be present in each intersection of nanowires moves, thereby making it an on-off binary switch required for computer memory and computation.

The biggest challenge lies in connecting these nanowires or crystals to the 100 times bigger wires comprising today's computers.

◆ Location privacy bill introduced ◆ HP open sources gadget software ◆ Hotmail goes in for a redesign

# A World of your own

Bangalore got a chance to see cutting edge technology at work when Planet Digit landed at Koramangala Indoor Stadium on the 14th of July 2001. An otherwise routine Saturday was transformed into a mega event for technology lovers of India's equivalent of Silicon Valley as the country's first Technology Content Zone attracted all of them with its force field.

Planet Digit was aimed at bringing technology closer to people through a combination of Tech Tracks, Technology pavilions, and an entertainment zone. Each of these was conceived to give visitors a close look at the latest happenings in the technology arena. Tech Tracks provided insights into various aspects of technology like mobile computing, .Net, security and learning, coming straight from tech gurus from industry giants like IBM, Microsoft and Apple. Live Technology pavilions were built around themes like Processor Power, The Future is Mobile, Advanced Digital Imaging. Visitors got their first looks at cool portable computing devices, futuristic input devices and interactive kiosks.

Techies who needed to freak out got their share of laughs from the Fun Zone, which had the Gaming Zone for game afficionados, and the Hungama zone for really serious freaking out. Yup, the Hungama zone came with a DJ presenting live music for the masses. Interactive quizzes were a major hit and budding singers got a chance to perform live at the karaoke-style singing competition.

Needless to say, this was one of the really popular areas of Planet Digit. As the time came for the day-long event to wind down more than 10,000 people had been through the gates. Come closing time at 7:00 p.m. and people were still coming in, clamoring for "20 minutes more", or "just a quick look at it". The reception desk had a hard time convincing folks that like all good things, Planet Digit had also come to an end.

What's next?

Phase 2 and 3 of Planet Digit at Delhi on the 21st and Mumbai on the 28th of July! Catch that news in the next issue of Digit.



A bird's eye view of the Technology Pavilions which were amongst the many attractions for visitors to Planet Digit




People queue up to gain access to Planet Digit from up to an hour before the 11:00 a.m. scheduled start



Visitors to Planet Digit get to participate in a long-range basketball shootout under the eagle eye of MC Melody at the Hungama Zone

Technology on display at the Content Pavilion: Visitors wonder at some of the cool products





Gamers, barricaded behind a wall of tires, got their chance to race through crowded city streets in multi-player sessions of Microsoft's *Midtown Madness*



The first Tech Track has Ajay Joseph, Microsoft, providing an overview of the company's .Net initiative—Microsoft's platform for XML- based intelligent Web services, to connect, transform, and transact uniquely across systems and applications

*"The objective of Planet Digit is to provide a forum where our readers can come face-to-face with the latest innovations from some of the giants in technology"*

*— Karan Manral*



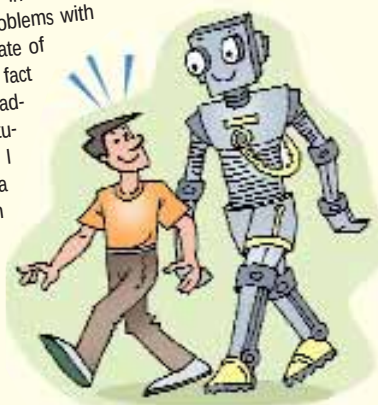
The Tech pavilions provided technology enthusiasts their first peek at some of the latest technology products

# Divergent on convergence

Dear Vinit,
I read your column 'All for One and One for All' on convergence in the July 2001 issue. I expect that my washing machine and microwave are eventually going to shrink into a single device that will do the dishes after cooking the turkey. But do you think this is good? If everything becomes easier, eventually the entire world will have to be dependent on machines, which is something that I personally don't want to happen. I believe technology should continue in harmony with nature and humans instead of being in conflict with them.

Today, the US is facing problems with landfills due to the high rate of obsolescence of PCs. The fact that silicon is not bio-degradable doesn't make the situation any better. While I am striving to make a career for myself in computers I don't want them to take over my daily life.

JAYDEV DHAKAN
*Via e-mail*



**Illustrations:** Farzana Cooper

**digit**

*Vinit Aggarwal responds:*
Jay,
My column was focused on the convergence of entertainment and technology and not really about how smart machines will eventually make mankind redundant. I think movies such as *Terminator* and *The Matrix* have dealt with this in great detail. Your microwave already doubles up as an oven, your fax machine can be used as a copier, your washing machine also dries your clothes and universal remote controls can operate multiple appliances. Whether we like it or not, convergence is happening. While I personally prefer multifunctional devices, I guess that is a matter of personal choice.

# Teach me not

Dear Digit,
This is in response to the article 'The Promised Goal' carried in the July 2001 issue. I graduated from one of the 300 engineering colleges affiliated to the Madras University. I chose Computer Science but found that the lab, which was established way back in 1984, still used Windows 3.1. The languages we learnt were Pascal, C, C++, Fortran and Cobol. Through the eight semesters, which also included some civil, mechanical, electrical and lots of electronics subjects, most of my class of 74 students, including myself, chose to join some private computer institutes in Chennai. Here we learnt Java, Oracle, ASP and JavaScript over a two-year period. When we got out of college we had knowledge of only the basics without a clue of what skills are needed in the real world. I am so confused and disheartened that I just want to get out of computers and join some other field. I now think that most engineering colleges are just a money making scam.

K. DHINESH
*Via e-mail*

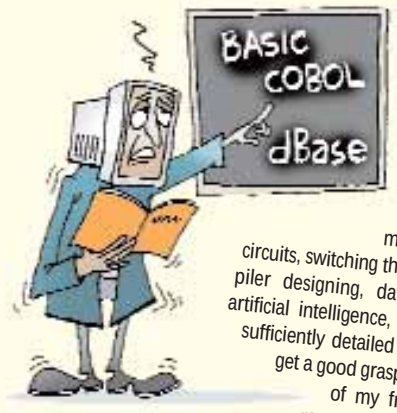
Hi,
I read your article 'The Promised Goal' published in the July 2001 issue. I am a B.A. (Hons.) student of Business Economics in the second year of a Delhi University college. The course contents are quite professional except for two papers that deal with computers. I was taken aback to see that the contents of the course included BASIC, dBase Lotus and Wordstar. I have no idea why the university doesn't include programming languages like C++, VB or Java that have practical applications nowadays.

Initially, an ancient 486 had to be shared between three students and even though we later got newer PCs I realised that we didn't really learn much. In retrospect however, I understand that the outdated course makes it very easy to score higher marks. Since this means a higher overall percentage, I think this is an acceptable trade-off. You just need to make the best of the situation.

BHARAT CHHABRIA
*Via e-mail*

Sir,
I read your article 'The Promised Goal' in the July 2001 issue about the state of computer education in Government colleges and universities. The article was well written, but as a student of Computer Science in IIT Kharagpur, I would like to make a couple of observations of my own.

In IIT, our Computer Science Course is by no means outdated. We don't waste time learning archaic languages like Basic, Fortran and Cobol. We started with C, and then graduated to C++ and Java. The professors meet frequently to revise the syllabi to make it up-to-date.




We may not learn the use of actual tools like VC++ or VB in the classroom, but our professors encourage us to pursue personal projects. What we do learn are fundamentals such as digital circuits, switching theory, algorithms, compiler designing, database management, artificial intelligence, etc. The courses are sufficiently detailed and coherent, so we get a good grasp of everything. Some of my friends who study in renowned private institutions are good at using various tools and compilers, but they lack this basic knowledge. So I think it unfair to include the IITs when you claim that what people learn in engineering colleges around the country is by and large rubbish.

Regards,
SUBHRADYUTI SARKAR, IIT KHARAGPUR
*Via e-mail*

**digit**

Dear Subhradyuti, Dhinesh, and many others,
As we expected, the story, 'The Promised Goal' has attracted a lot of feedback from all quarters. There are a lot of varied opinions on this. Some of you have written in saying that you agree with the fact that computer education provided by colleges in India are lacking in many ways. Others have vociferously defended the contents of the curriculum. As one reader that wrote in to us said, "Colleges help you get a strong foundation in the fundamentals, which will be useful for the rest of your lives." And there were those that felt that it doesn't really matter because "it's just another subject".

One thing that comes out clearly from this is that the levels of satisfaction vary according to the expectations that each of us has of our education system. Not everyone can afford a three-year computer course from a private institute in addition to college (or study in IIT for that matter). Many of us expect that our college courses should go beyond just providing a degree. It should be designed to prepare us for our careers. And everyone has his own view on whether three or four years of computer education in colleges is time well spent.

## Crime Time

Karan,

I want to thank you for having brought to the fore the issues of privacy and freedom of choice with regard to Internet access and usage through your editorial in the July issue. I fully agree with you that Internet usage is one thing that needs to be promoted and encouraged rather than treated with the same callous attitude that governs services like the Indian Railways. Without an increase in penetration of the Internet in the country it will not be possible to deliver all the benefits of information technology to the common man. At present the levels of Internet usage in India is very low and the government certainly isn't helping the situation by framing laws such as these.

*IMTIAZ*
*Via e-mail*

**digit**

Dear Imtiaz,

As you mentioned, the larger objective should be to promote the use of the Internet. All other signs seem to indicate that the government is attempting to do its part to spread the benefits of technology.

Hence this particular move makes even less sense. Cyber crime is an important issue and needs to be tackled but the approach being adopted seems to be excessively heavy-handed.

## Mobile Mania

Karan,

I read the article about mobile phones in the June 2001 issue, and have made a sketch on the recent slashing of mobile phone prices.

*PRATEEK CHAKRABORTY*
*Kolkata*




**digit**

Dear Prateek

Just an aside. Do they use mobile phones for 'Phone-a-friend' in our national programme, *Kaun Banega Crorepati*?

**Send your letters marked 'Readers Letters' to the Digit office:**
**D-222/2, MIDC, TTC Industrial Estate,**
**Om Sagar Building, Nerul, Navi Mumbai 400 706**
**Phone: 022-7629191/9200;**
**Fax: 022-7629224**
**E-mail: readersletters@jasubhai.com**

## Goof Ups

- No guys, you are not lucky! Rashi Peripherals is not selling the Logitech Cordless Mouseman wheel at Rs 480 as printed in the A-List. The actual cost is Rs 4,500.
- Don't always be so positive is what Prashant Parikh seems to be pointing out as we have rated the 'Poor performer' Biostar motherboard as positive (+) instead of negative (-) in Radar, July issue.

*Notice any goof-ups? Write to goof@jasubhai.com*

## Short Bytes

### We dig it

Dear Karan,

I recently visited the IRC chat servers and registered a new channel and named it #digit. This channel is dedicated to technology discussion and I hope it rocks with new topics of discussion.

*SUBHRO SANKHA KAR*
*Via e-mail*

### Back to the 'sticking' boards

I think you really have to do something about sticking the Digit CDs to the card paper. Some portion of the backside of the CD cover gets torn and looks like someone has ripped it off from the card paper. Every time when we buy the magazine there is a task ahead of us to pull the CD cover very gently. Instead of sticking the backside of the CD cover you could use an extra flap of card paper that will act as a connection between the CD Cover and the card paper. You could stick one end of it to the CD cover and the other end to the cardboard. Then, we can rip off that flap from the cardboard keeping the CD cover safe and clean. We could even cut out the flap from the CD cover.

*KAUSTUBH PAWASKAR*
*Via e-mail*

### Programming loop

Firstly, you could start a regular section for programmers even though you have released a new magazine. Secondly, you could start another regular section that will deal with how the computer works. For example what happens when I cut/copy and paste something or how the various hardware devices work or on emerging technologies such as Bluetooth.

*AZAHAR*
*Via e-mail*

### Be Indian, buy Indian

Previously, there used to be a small Indian flag on the front cover of the magazine, but this symbol has been removed from the new Digit cover. Digit, therefore, seems a foreign name. Get the flag back in the next issue of Digit.

*SRI RAM*
*Via e-mail*

# And miles to go...

A year has passed since the enactment of the Information Technology Act, 2000. What has and has not happened in the first year of the IT Act 2000? Manu Khanna and Shonal Gupta get the viewpoints of some prominent people

The enactment of the IT Act was indeed a shot in the arm for the IT industry. It was supposed to provide just the environment required to achieve the long cherished dream of modern India—making India an IT superpower. The bill provides the basic framework for giving legality to digital records and signatures. This will allow Indian businesses to transact over the Web freely, thereby enabling an effective reduction in communication costs and more importantly, increasing competitiveness in the market. The Indian consumer can now shop for products and services from Web sites at their convenience and in a secure manner.

**Phiroz Vandrewala**
Chairman,
Nasscom



The implementation of the IT Act 2000, has led to a number of positive results. Most significant of them has been bringing digital signatures on par with paper signatures so that they are valid in a court of law. With respect to security, digital signature scores over a hand-written signature as one can claim the latter to be forged and therefore not valid.

The appointment of a Controller to invite applications for, appoint and eventually oversee the functioning of Certifying Authorities is a clear indication that the government is prepared to do all that it can to ensure successful implementation of the IT Act and that too within the shortest possible time.

> "The government is prepared to do all that it can to ensure successful implementation of the IT Act within the shortest possible time"

Even though there has been some criticism of certain areas in the Act, the fact that the e-commerce transactions and cyber-crimes are still in their infancy in the Indian context means that it would have been quite impossible for any Act to have been comprehensive. Over the past year, India has definitely made a good beginning by realising the potential of the Internet and creating a conducive environment for conducting business on the Web.

The last one year has demonstrated that the initial hurry in passing the Act was not accompanied by appropriate swift action for its effective implementation.

Take the issue of digital signatures. Recently, the government appointed a Controller and Deputy Controller of Certifying Authorities to establish the basic framework for making the concept of digital signature feasible and completely secure. The government has invited applications from companies willing to become Certifying Authorities, but nothing concrete has happened till now.

> "Crimes such as cyber stalking and credit card fraud do not find mention in the IT Act…the government is still defining the scope of the law"

The other area of concern is the issue of electronic records. The Cyber Regulations Advisory Committee (CRAC) was assigned the task of prescribing and eventually specifying the electronic form, which will replace the paper forms currently being used in most government offices. Even after several meetings, it is yet to come up with the basic structure. If nothing else, this shows the slackness on the part of the government. The IT Act 2000 isn't just about e-commerce, it has another role to play; to target the new forms of cyber crimes. Crimes such as cyber stalking and credit card fraud are inherently incapable of being covered by the provisions of the IPC. Though these had emerged as a reality by the time the IT Act was passed, they do not find mention in the IT Act. Same goes for electronic payments, online Intellectual Property Rights, online consumer protection, domain name issues, to name just some of the areas not covered in the Act.

**Pavan Duggal**
Advocate, Supreme Court of India
and Cyberlaw Consultant



The Indian IT industry expected a lot more of the Indian IT Act 2000. Surprisingly enough, the government is still defining the scope or provisions or the law. The IT Act at present does not provide any standards for its actual implementation.

What do *you* think? Come, speak your mind at www.yahoo.co.in

www.yahoo.co.in
Catch 'em live on Yahoo!
*Pavan Duggal* on August 14 at 4 p.m.
YAHOO! INDIA

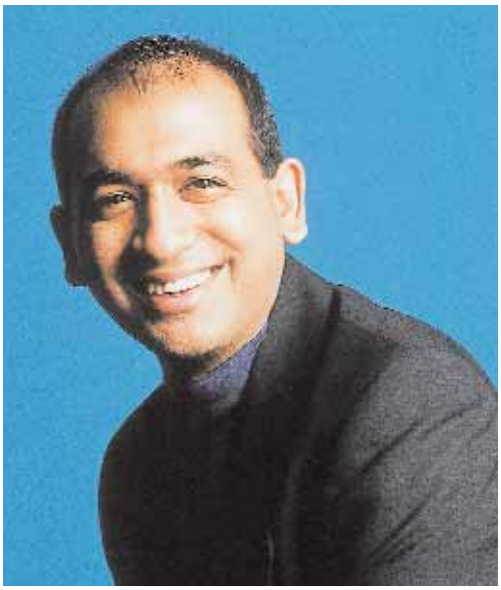
# What's the Buzz about?

Bringing music into your life over the Net, that too legally—that's what Sudhanshu Sarronwala does. We focus the spotlight on the man and his latest venture, Soundbuzz.com

VIDYARAMANAN S.

A successful businessman is one who realises an opportunity, seizes the moment and makes good use of it. Sudhanshu Sarronwala fits this description right down to the last detail. With a mathematical base from Delhi University and a business degree from IIM Lucknow, Sarronwala is at the helm of affairs at Singapore-based Soundbuzz.com as its CEO. Soundbuzz.com is the first of its kind to offer digitally encrypted music in Asia. Till date, Soundbuzz.com has been the key player in digital distribution of music in the Asian region.

Music is nothing new to Sarronwala, who has an extensive broadcast and media background with over 10 years of experience managing media businesses in Asia. He enjoys the distinction of being the former managing director of MTV Asia and the senior vice president of MTV Networks Asia. While at MTV, he realised the potential of music in the Asian and Asia-Pacific region. The vision became a reality in the form of Soundbuzz.com.



Sudhanshu Sarronwala, CEO, Soundbuzz.com

"I want to make the artist, the recording companies and the online distributor happy on their way to the bank"

In early 1999, Napster brought along with it all the questions related to copyright infringement. Sarronwala liked the way Napster was using technology to distribute music, but he preferred doing it the right way—the legal way. He was aware that a simple dotcom model would not generate revenue, and figured out strategic plans to act as a music aggregator rather than just a digital music distributor. He wanted to bring in a close interaction between the artiste, record labels and the distributor. "I want to make all three happy on their way to the bank," quips Sarronwala.

The inspiration from Napster, coupled with the aspiration to make all the players content, and at the same time a vision to distribute music digitally in a secure manner paved the road for Soundbuzz.com.

While other digital distributors of music viewed the aspect from the technology standpoint, Sarronwala looked at it from a music industry perspective. According to Sarronwala, "Digital music is the biggest thing since the invention of CDs. It's the biggest threat and also the biggest opportunity for the music industry."

The music industry has a projected growth from $10 to 50 million a year, and is expected to grow to a massive $150 million industry in three years according to IDC estimates. Sarronwala believes that he could reap the rewards by helping record labels do decent and legal business over the Web.

Today, this speaks volumes for the success of Soundbuzz.com in the Asian region. In India, the company has joined hands with a repertoire of Indian music labels to distribute old and new music labels via the Internet. Using the latest Digital Rights Management technology from Microsoft and distributing the music in the Windows Media 8 format enables the company to distribute music in a highly secure fashion, at the same time helping the music industry protect copyrights. The channels of distribution are going to be many-fold, ranging from computer manufacturers, wireless devices, Internet, MP3 players and many more to come in the near future.

He also has plans to introduce patented pieces of music for cell phone users. Today there are plenty of Web sites that offer downloadable ringer tones for cell phones. Soundbuzz is also working on similar grounds for releasing patented ringer tones.

Will Soundbuzz.com be a successful player in a field full of free and illegal services such as Napster and Audiogalaxy? Time is the best answer to that question.

Illustration: Ram




# The FUSION of Communication

**Interested in messages anywhere, anytime? Then unified messaging is probably for you**

RINKI BANERJI

The phone lines in your company are down and you simply have to contact your public relations agency in the next half-hour. So you send an e-mail hoping that the person at the other end checks the message. But the PR agency is trying to cope up with a systems crash. And yet the recipient gets your mail and acts according to your instructions. Now how did that happen?

Welcome to the world of Unified Messaging (UM). This is the integration of real-time communication that allows you to receive any form of message by retrieving it via telecommunication devices such as local phones, any Internet machine, fax machine, e-mail account, pager, handheld device, Windows PC or SMS/PCS mobile phones. All messages sent to you in various formats such as e-mail, fax or SMS, fall into a single inbox from where you can retrieve them. There are many services available on the Internet that let you have a single inbox or 'messaging centre' on the Web for all types of messages, letting you access your messages online.

## How it Grows

A glance at the colossal increase in the use of messaging services:

- There are 85 million corporate voice mail boxes currently in use, with the number expected to grow to 140 million by 2003 (Ovum Evaluates Unified Messaging, Ovum Ltd, 1997).
- There will be 170 million subscribers for unified messaging, provided by service providers by 2006 (Ovum Unified Messaging Report, Ovum Ltd, January 1999).
- The Kauffman Group estimates that fax pages over IP will exceed 250 billion worldwide by 2004.
- IDC estimates that almost seven million people used remote or wireless technologies to access e-mail for business purposes in 1996, and that the number will rise to 40 million by 2001 (IDC Mobile Messaging: A Comprehensive Analysis, 1997).
- Dataquest estimates that by 2001, between 27 per cent (low-end systems) and 50 per cent (high-end systems) for all voice mail systems will ship with unified messaging (Dataquest Messaging—Unified, Integrated, Universal, January 1998).

As a sender, you can avail of several options as to where to send a message. As a recipient of a message too, you do not have to necessarily use a PC or a telephone to access your messages. Whether you do it via fax, e-mail or voice mail, it doesn't make a dime of a difference. Like wireless before it, e-mail and the World Wide Web have been successful steps in the evolution of modes of communication, and UM is another step in that evolution.

**How does it work?**

In UM, getting information through your telephone system entails receiving voice messages through voice protocols such as voice mail. If you are an e-mail user, you can contact someone who doesn't use an e-mail service, but does use voice mail, by sending a text message as an attachment. The attached message sent to a phone will be converted to voice using text-to-speech technology.

The receiver can reply, forward or delete the message without ever knowing whether the message was sent to him as a fax, voice or e-mail. You, in turn, receive your reply as a voice message attachment in your mailbox, which is easily converted to text using speech-to-text technology.

Besides, if you have just a single telephone line for working on the Internet and receiving incoming calls, you need not worry about losing your calls during Internet sessions anymore.

With the Unified Messaging System (UMS), all you need to do is log on to a voice mailbox online and check for messages. This can be done either through a visual interface such as Microsoft's Outlook Express or through an e-mail client that supports UMS. The sender of the message and the length of the calls can be recorded while making use of the e-mail client.

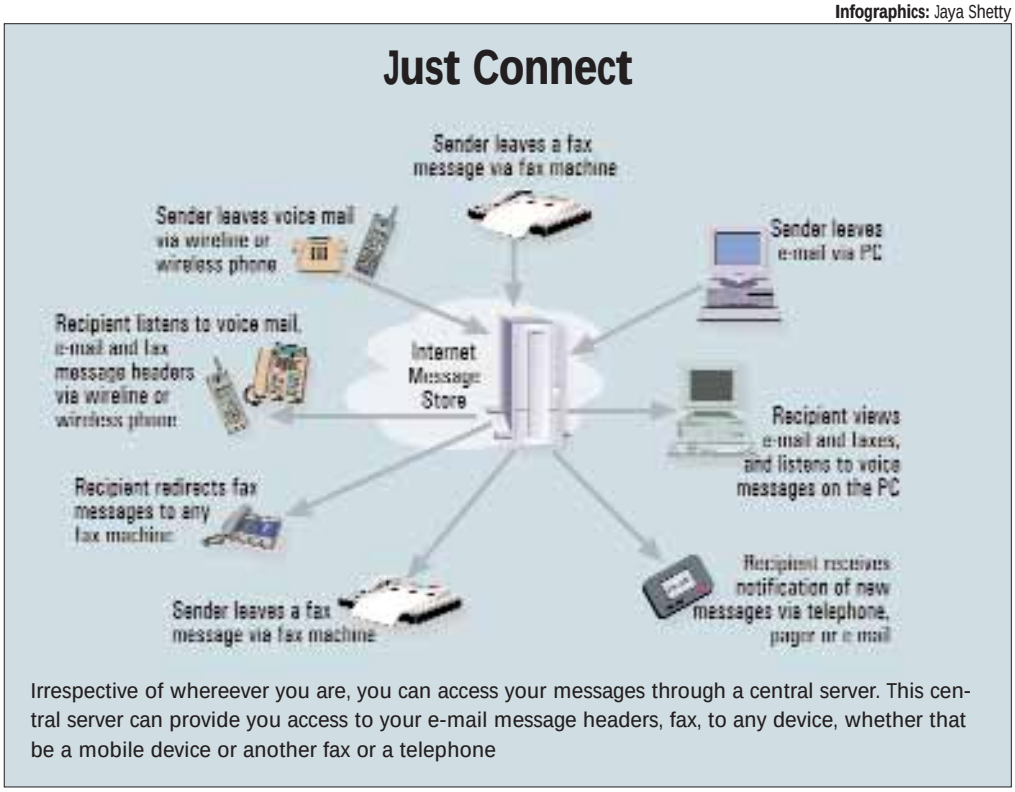
You can also locate the sender of the messages and the length of the calls. If you wish to listen to messages on your PC, it can be done by enabling the text-to-speech application.

If you are a wireless user, you can avail of this service on your mobile handset wherein the different voice mails, e-mail and fax messages are collected as voice mail, and you can access your messages by using the soft keys of your handset and selecting the message. The text-to-fax technology is all about directing e-mail to your fax machine.

Some popular and efficient packages such as Microsoft Outlook at the front-end and Microsoft Exchange as its back-end, offer facilities to categorise messages and maintain them along with your contact lists.

Even the caller's telephone numbers can be stored in the subject of the messages, letting you avail of the facilities that would automatically render journal entries and send messages to a different folder. Similarly, fax-mails and fax-on-demand features are in-built in them and can be integrated easily. As you can see, it is the first step towards global connectivity.

**Infographics:** Jaya Shetty




Irrespective of whereever you are, you can access your messages through a central server. This central server can provide you access to your e-mail message headers, fax, to any device, whether that be a mobile device or another fax or a telephone

## Voice Mails

Gone are the days when the answering machines and devices could only be connected to phone lines. With voice mail features that add power and flexibility to the simple answering machine, communication anytime, anywhere has become an easy task. Today's voice mail allows messages to be more detailed and lengthy and they can be accessed and acted upon by you even when you are on the road. In the future, this functionality will probably be increased, for instance dialling the caller's number automatically. Some applications also permit creation of mailbox lists for sending the same voice message to different people. Several voice-messaging solutions today allow the conversion of recorded audio into the .WAV file format, which can then be delivered to an Internet location from where it can be accessed by people who may not have a voice mail system.



The Messageasap.com inbox for unified messaging




A unified mailbox and mobile access to your messages from Messageasap.com

### Web-based UM services

There are several Internet-based services that are delivering UM capability to users. These services offer you access to e-mail, fax, voice mail and voice e-mail via a single inbox.

Your inbox can be accessed via a Web interface from any location. MessageASAP, one such service, allows you to install a client software that lets you store messages on your desktop itself. HotVoice.com is another service that adds instant messaging to the mix and has a client software that alerts you when you receive a new message.

However, to make use of all of the features on most of these services, you need to be a US-based consumer. For instance, people can leave voice messages for you on the US phone number that Onebox.com provides you with and you can access these any time from your universal inbox.

But, before you run out and create an account on one (or all) of these sites, you must take note of the fact that several of these free services, such as eTouch.com and MessageASAP.com, are turning into paid services.

### Way to go

Although at present UM is not very popular with individuals, it has taken off well with corporates. The latter usually need to be able to send and receive e-mail, voice and fax messages at all times. Several of the companies that offer Web-based services to individuals, provide solutions to corporates too, for instance, uReach.com. But more excitingly, big boys such as Microsoft and Lotus have also entered the fray.

Microsoft's Exchange Server has been designed and developed to become a platform for unified messaging systems. It provides organisations of varying sizes with connectivity, a single physical store for messages of all media, and allows them to coexist with various protocols and clients.

It provides easy administration and most importantly, it integrates with Microsoft's Outlook software to deliver all of this to each individual user in a familiar environment. Lotus has a similar strategy with its Domino platform, which is already in use at a lot of organisations all over the world. Developers can now extend the functionality beyond the collaborative tools provided by Lotus Notes to unified messaging applications.

Other technology infrastructure companies such as Cisco, Dialogic and Ericson are developing technologies, products and solutions for unified messaging because of the potential for new services that integrated networks for data and voice will provide users.

Though initially these products are being developed for corporations, telecom service providers will eventually make the services available to individuals.

### Some User Scenarios

**1. Telephone access to e-mail**
You can access and manage your e-mail and fax messages via a telephone. The system will notify you about waiting messages, read you the contents and allow you to reply to them with a recorded voice message. Longer messages can always be redirected to a nearby fax machine.

**2. PC access to voice mail**
Voice mail messages appear in the inbox, like regular e-mail and fax messages. You can play back the message through speakers or a headset. Forwarding or replying to messages is also possible.

**3. Telephone access to information**
You can access other applications and retrieve information such as current stock prices or financial performance data.

**4. Wireless notification and access**
If you are travelling, you can receive alerts about new e-mail via your mobile phone and then access and respond to them using a smart phone, a simple wireless device, or a PDA connected to your cell phone.

**5. Fax mailboxes**
Fax messages are delivered to an electronic mailbox, which allows you immediate access to them when you travel. Privacy is a major benefit, along with lower cost.

**6. Web access to all messages**
As all messages are in a single inbox, you can access them via a Web terminal.

1/2 page V. AD

Unified messaging, as it stands today, brings together several existing Internet technologies. As a result, most of the standards that have been instituted for data-based networks will also carry voice data in the future as telecom networks move towards data transfer.

**Where's UM headed?**

UM is quite prevalent in the West and gaining ground even in India. Earlier, fax, voice mail, and e-mail servers were installed discretely, being separate entities, and each operated only within its own area of responsibility. Today, these services are all integrated into one system that acts as a repository for collecting various messages and are comfortably operated from one user interface, known as the UMS, that offers enormous advantages in the field of business communications.

The unified inbox that we have today is set to evolve into an intelligent messaging network that will allow communication via wired or wireless devices. You will be able to send and receive messages without having to worry about how the recipient will view or hear them. Recipients in turn will be able to choose to check their messages via the medium they are comfortable with.

The system will be able to search intelligently and locate you easily whether you are logged into your messaging service or are only accessible via messages sent to your pager. Voice applications built around speech engines will make it possible for you to access any information you need at any time. Businesses will be at the forefront of this change as they search for solutions to the challenges of making it possible for employees separated by time and space to work together to capitalise on opportunities available to them.

Unified messaging as it stands today is a combination of several existing Internet technologies. Most standards such as HTTP, SMTP, POP3 and SSL form the foundation of most existing UMSs. Software architecture has also moved towards integration with Sun's Java programming language and the recently introduced Microsoft.Net, making it possible for applications to run on different platforms.

But this is not the case in areas such as wireless communication and speech processing. Another major issue is that telecom infrastructure in various parts of the world adhere to different standards.

http://www.

Some popular services you can avail of:

**www.onebox.com**
For free voicemail, fax and e-mail in one place

**www.etouch.com**
Provides IP-based solutions for unified messaging

**www.j2.com**
Voicemail, fax and the works

**www.ureach.com**
Your integrated communications tool

**www.hotvoice.com**
Connecting through gateways

**www.yac.com**
You are always connected, what else?

The Japanese iMode network is more advanced than the GSM networks that are currently in use in India. To enable the move from the existent unified messaging to unified communications, networks of the future will need to adopt a common standard that will allow data to flow seamlessly through all of them.

# Technology @ home



Imaging: Neeta Wadiker

Have you ever wished you had a door that locked up by itself? A vacuum cleaner that you could control from your office? Well, your wishes are on the verge of coming true

Remember the Jetsons? The family of the future with a goofy dog and a robot maid that your kids catch on Cartoon Network? In the Jetson household, machines seem to do all the working and running. Anything that needs to be done seems just a push of a button away. A sleepy George Jetson makes it to the office every day without lifting a finger, while all the work from bathing and dressing to preparing and serving breakfast is done by their incredibly automated house. For years, writers, moviemakers and cartoonists have fascinated us with the concept of an intelligent home. They shared their vision of the future with us. But which one of these visions are the closest to reality?

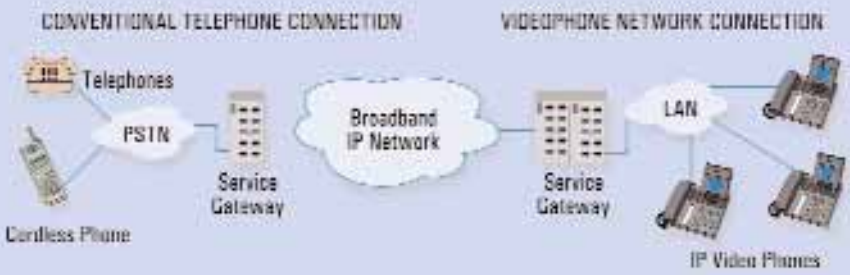
**2001: Where are we today?**

How close are we to intelligent homes, workspaces or devices moving from a stage of novelty to that of universal prevalence? Technological developments that have taken place over the last few years seem to be converging to make an intelligent home possible in the near future. Computing in particular has spawned many of the technologies that are likely to play a major role.

Wireless standards such as CEBus, HomeRF and Bluetooth are making it possible to design devices that communicate with each other without the need for wires. This can be used to provide solutions for many simple automation problems. AMX and Crestron offer control systems that allow you to control any

**Infographic:** Jaya Shetty

## Convergence at Home




Most homes today have regular PSTN telephone connections. As telecom service providers change over to data networks and broadband connectivity makes inroads, we will see a considerable amount of convergence. You can even receive your daily newspaper on your printer at home

electrical or electronic device via LCD touch panels and infrared or RF controllers. You can get a feel of how this works by visiting AMX's Web site (www.amxcorp.com/solutions/index_solutions.asp). You can also program the system to create sequences of events, such as switching on the lights in a room when the doors to it are opened.

Remember those extra long days of work you put in at the office? And when you returned home, you had to face that mounting pile of unwashed clothes, the refrigerator running low on your favourite food groups and the house looking like a pigsty? Those days might be old lore, going by the improvements in processor manufacturing technology. Advancements in this field have made it possible to insert extremely small and powerful processors into almost any device. This means devices that use these processors can now perform tasks beyond their basic functionality. This basic level of 'intelligence' is now being incorporated into many household appliances. LG, for example, has an Internet refrigerator that will be able to alert users when expiry dates for items stored inside are approaching. It will also be able to order groceries over the Internet when supplies begin to run low.

Another example of this intelligence would be the Internet-ready washing machine, which can download wash programs for new types of fabrics from the Internet. In time, you will be able to remotely monitor these machines to program wash cycles. Even service technicians could monitor them remotely to diagnose problems. Down the road, these appliances will automatically detect each other and collaborate without any manual intervention.

The introduction of broadband networks that connect people's homes means that it is now feasible for services to be delivered directly to you at home. Imagine the possibilities. Take the newspaper for instance. Most of us don't read it from one end to the other—we have our favourite sections.

Aside from the PC, which will continue to provide users with several ways to communicate, there are already some appliances such as InnoMedia's InfoTalk that allow you to make phone calls over the Internet using VoIP technology without requiring a PC. Videophones also can now operate off the same networks that bring Internet access into our homes. In time, we will probably be able to switch to an IP-based phone service, which will allow us to make voice, and videophone calls to anyone in the world.

Entertainment also seems to be moving in the same direction. Intelligent TV services like TiVo, available in the US, automatically find and record your favourite programs and allow you to watch them at your convenience. While it currently uses a phone line to access TV programming details, eventually much greater functionality will be available to users of these kinds of services. An entertainment network in your home will make music, movies and the Internet accessible at any location in your house at all times. You can watch DVD movies, play games and surf the Internet with this single entertainment console.



Speak with IP-phone

### All under one roof

Audio-visual integrators and traditional electrical integrators are providing most of the existing home automation technology. They have formed consortiums like HAVi (Home Audio Video Interoperability, www.havi.org) that provide a common, openly licensable specification for networking digital home entertainment products. However, there is

## Artificial Intelligence

It is the study of how computer systems can simulate intelligent processes such as learning, reasoning, and understanding symbolic information in context. Simply put, it is a branch of computer science concerned with making computers behave like humans. A new movie called AI, directed by Steven Spielberg, depicts a society that is largely dependent on intelligent robots and computer systems. While this might be far from becoming our reality, there are several areas where AI has made considerable progress.

AI involves work in algorithms, databases, and theoretical computer science as well as fields such as neuroscience, cognitive science and cognitive psychology, mathematical logic and engineering. Some areas wherein considerable progress has been made include natural language processing applications, robotics, and computer games. One of the most successful demonstrations of AI took place way back in May 1997, when a supercomputer called Deep Blue from IBM defeated world champion Gary Kasparov in a chess match.

## Digitally Secure

If all those paintings by the masters and the antique Wedgewood and Noritaki adorning your house leave you feeling insecure during long absences from home, broadband can come to your rescue. You can use a security network that consists of a few inexpensive Web cams that can stream live images for you to view in a browser from anywhere across the world. And this is no remote possibility. It's happening right now. Vicinium offers a NeighborMation server which lets you arm, disarm, and monitor your security system status remotely. It can also send security alerts to trusted neighbours in case of suspicious activity and automatically arm their security systems. Pretty neat, huh?

now a considerable amount of interest from some of the major computer and networking manufacturers.

HomePNA is an association of several companies that include Compaq, AMD, AT&T, Intel, Motorola and HP that are working together to ensure adoption of a single, unified phone line networking standard. All this leads to the conclusion that in the not too distant days to come, you won't need to be Bill Gates with $50 million to spend to have an intelligent digital home. Home gateways will form an important part of the home of the future. The current generation of home gateways allows multiple users to connect to the Internet, with numerous companies offering solutions that act as combination proxy servers and firewalls. However, the next generation of home gateways promises to deliver a lot more.

The Open Services Gateway Initiative (OSGi) is an independent consortium with more than 75 members from around the globe. This group is working to define open specifications for the delivery services over wide-area networks to local networks and devices. The OSGi framework will allow multiple software services to be run off a services gateway. This could be a set top box, cable/DSL modem, or even a dedicated residential gateway. Sun Microsystems has introduced an OSG-compliant Java Embedded Server that will allow people to access subscription-based services over a network. IBM is also developing home gateway technology, based on WebSphere embedded software, along with National Semiconductor Corp. This aims at extending their vision of pervasive computing which involves computerising anything from refrigerators to a pair of earrings.

### No software, no go

For a truly intelligent home you could end up needing huge amounts of processing power and storage space in addition to expensive server software. Realistically speaking, it is unlikely that most ordinary households will have this. Intelligent networks are what will power these homes if they are to be accessible to a larger number of people. The multiplicity of the hardware and the software platforms that form networks make a cross-platform architecture absolutely necessary. This means that not only does software need to be able to run on different hardware and operating systems, but also services written for different platforms need to be able to communicate with each other. It becomes necessary that many of the features that are offered be provided by service providers. This would mean that the function of processing is actually distributed amongst various sections of the network.

Java, from Sun, allows developers to write applications for a device without worrying about what kind of hardware and software is involved. This is very important because it cuts down the development time for any software application, which is the heart of any service provided over a network.



An AMX control system

Jini is one network technology introduced by Sun that enables devices to plug together to form a community. This happens without prior planning and devices provide services to other devices that are a part of the community. New devices on the network register themselves with a lookup service, which in turn provides information that allows a user or another device to detect them. Microsoft's new .Net platform, which aims at enabling XML-based Web services is also likely to play an important part in the future.

There are a number of developments taking place in embedded operating systems that are worth taking note of. Linux players like RedHat are becoming increasingly active in this area. Numerous other players are also trying to get their technologies established.

### Welcome home

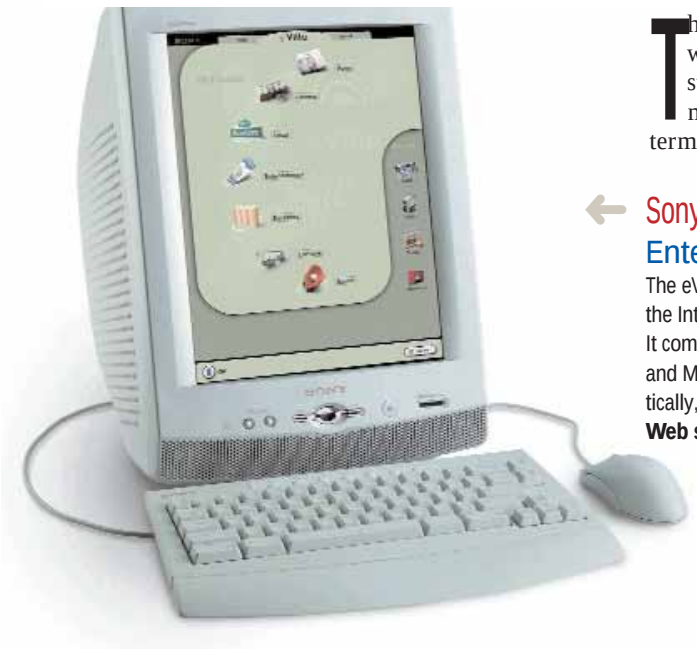
The Jetsons' home may still sound like a futuristic fantasy to most of us, but it's closer than you think. While the reality is that there is still some way to go before the average home has the kind of intelligence that is on display in the cartoon series, any new home that you buy, five to 10 years from now, will include a host of connectivity and convenience options. Existing homes are already being fitted with smarter appliances and electronics.

The fact is that almost every prominent technology company—be it IBM, Intel, Sun, Seagate or Microsoft—is involved in projects that demonstrate the use of technology in homes. Consumer electronics majors and traditional home automation companies also seem to be trying their best to develop new products that will excite homeowners. So, are you wondering when exactly you are going to see all of this in your house? Well, the future is out there and it's waiting to happen.

http://www.

***http://architecture.mit.edu/house_n/web/index.htm***
MIT Home of the Future
***www.techhome.org***
Integrated Home Systems
***www.cisco.com/warp/public/3/uk/ihome/***
Cisco: The Internet home

# Chic-tronics



This month's selection of objects worth dying for, range from a stunner of a music system to a mobile device that takes the term 'multi-tasking' to a different level altogether. So even if you think they are a little out of reach, there's nothing to stop you from drinking in the sights and drooling over them.

## Sony eVilla
### Entertainment Centre

The eVilla is Sony's network entertainment device, designed specifically to surf the Internet. It is based on the BeIA operating system and is multimedia-ready. It comes with convenient preset channels that let you listen to Internet radio and MP3s. The eVilla has a 15-inch monitor with the longer sides oriented vertically, rather than horizontally as in most computers.
**Web site: www.evilla.com**



## Frontier Labs NEX II 64MB
### Looks don't Matter

This USB-based MP3 player is way ahead of its competitors. The sound quality and fast file-transfer times are sufficient reasons to go for the NEX II. It has been designed to overcome the limited memory available with Flash media. It also supports multiple storage formats,
**Web site: ww.frontierlabs.com/NexII.html**

## Sony Aibo ERS-210
### Aibo Planet

Welcome to the world of robot pets. The current generation Aibo (the ERS-210) is an upgrade to the ERS-110, which captured the imagination of pet-loving enthusiasts a couple of years ago. The new version comes with 32 MB memory, a 64-bit RISC processor, and new voice-recognition capabilities. It can dance and talk, but also has a digital camera built into its nose.
**Web site: www.us.aibo.com/3d/index.html**



## Casio WQV-1d-8CR wrist camera

### A Shot in your Wrist




The Casio WQV acts like any standard digital watch with date, time, stop-clock and 24/12-hour modes. But hang on a minute! This watch is a camera too—you can click pictures and then review the results quickly and easily on the LCD. But the downside to this gizmo is that picture quality is not satisfactory. Images are 120x120 pixels in size and at 72 dpi and greyscale, they're neither sharp nor clear.

**Web site: www.casio.com**



## Aphrodite Music System

### Beauty Incarnate

TAG McLaren Audio, the audio division of the famous British Formula One racing team, has introduced a new high-end music system called the Aphrodite Music System. Fully remote controlled, Aphrodite's system is Flash-memory based and can be upgraded via the Internet. The system is not merely a breathtaking beauty, but comes with sound quality that boasts of some of the finest engineering. For once, you can get entranced in music while feasting your eyes on the goddess of beauty herself.

**Web site: www.tagmclarenaudio.com/grear/sounds.asp**

## Nokia 9210 Communicator

### Light Heavyweight

Nokia 9210 Communicator is definitely a welcome step from Nokia. The product can support some frequently used PC applications such as MS Office. It even offers Java support, wirelessly of course, besides the usual features such as mobile e-mail and WAP. It features mobile multimedia that supports colour video clips and boasts of a full-colour screen with 4096 colours. And not to forget, all this comes packed in a unit that is 158x56x27 mm in dimension with a net weight of 244 gram. And if you have a grouse against the tiny keys on these and similar devices, take comfort—the Nokia Communicator has bigger keys and even a new user interface.

**Web site: www.nokia.com/phones/9210**






## IBM Netvista X40i

### Sleekonomics

It stands a class above its predecessors in terms of design and compactness. It's clean, sleek looks are enhanced by the flat panel monitor. Except for the keyboard and the mouse, everything else is compactly stashed above, below or beside the monitor. The motherboard and the hard drive are discreetly integrated behind the display.

**Web site: www.ibm.com**

# Putting the 'M' in Media

The world of multimedia beckons. But before you start off on your journey, make sure you fill your knapsack with these useful tid bits

NILESH KAKADE

The world around you isn't the same anymore—everything's getting interactive. Look around you and you will be amazed by the power of the digital world. Split second images flashing at you; screens responding to your touch and intelligent enough to respond to the next level of interaction; games, movies and other information-related products that really set you on a high…the excitement never ceases. It's a world almost without any boundaries, limited only by your imagination.

The name of the game then, is multimedia. A combination of text, graphics and sound working together to give you a mind-blowing experience. An experience that makes you wonder—how do they do it?

### Skill set: the ground work

Producing a multimedia package involves a number of stages. Up first is the storyboard, which involves the creation of a work sheet that describes in minute detail the structure of the multimedia content and how the images, video, animation and sound are to be integrated. The storyboard also describes the workflow for your project. All the team members involved with the project work in accordance with the storyboard. A slight variation from it and the whole project could go haywire.




**Photograph:** Jiten Gandhi, **Imaging:** Solomon Lewis

## The Team

**Creative Director:** He is the ideas man who lends his views visualises and conceptualises the whole project. He supervises the entire project and guides his team accordingly.

**Graphic designer:** This is the person responsible for the visual look and feel of the multimedia presentation. A good sense of visual appeal, colours and design harmony, typography and sense of balance are essential.

**Instructional designer:** This person plays an important role during the process of developing Computer Based Training (CBT) packages; it is he who decides how a CBT is structured and what kind of learning model should be implemented.

**Programmer:** A programmer, typically called integrator, is responsible for assembling all the multimedia elements together. He is the person who corresponds the sounds with the buttons, puts the visuals in the right place, gives the transition effects between sequences, etc. In short he puts the entire jigsaw puzzle together.

**Quality checker:** The person who ensures that the presentation is totally error free and meets the specifications stated. He looks for bugs in the programming, points out errors in the links, and basically ensures an error-free presentation.

**Proof reader:** His role is similar to that of the Quality Checker. He ensures that the language and grammar used for the presentation is absolutely error free and in the right perspective. He ensures that the language is easy to read, and conveys the right message to the users.

The team members involved in a specific project could include a Creative Director, Graphics Designer, Instructional Designer, Programmer, Proof Reader and Quality Checker (*see box, 'The Team'*).

While the general picture is that the designer and the script writer form the crux of the entire project, a major portion of the responsibility also falls on the programmer. He works in the background, doing the groundwork and needs to understand the complexity of work involved. He ensures that ideas put forward by the team are implemented in right earnest and that the project is executed as it was conceptualised.

Multimedia programming or authoring is essentially writing the scripting or programming code that integrates the various elements of multimedia content, such as text, voice overs, background music, images, animation and video. Precision timing is of the essence here, what with all the fancy graphics, movie clips and sounds that come embedded in the multimedia applications available today.



> A multimedia programmer should have sound programming knowledge, a sense of logic and an eye for aesthetics
>
> Kiran Nayak
>
> Senior Project Manager, Indiagames.com

Good multimedia content is distinguished by the smoothness with which the audio ties in with the video or animation, and the way everything happens without any lag or jerkiness. You would have noticed this on CD-ROMs and Web pages—the moment your cursor moves over a certain point or co-ordinate axis, you see pop up messages, sound applications and voice over enabled, buttons changing colour and the entire interface changing as required to enhance the level of interactivity. The programmer has to take these aspects into consideration and see to it that all the elements work in proper synchronicity.

### The learning curve

"Multimedia programming involves lots of creativity and hard work. A programmer should have a sound programming knowledge base in OOPs (Object Oriented Programming Languages), a strong sense of logic with an eye for aesthetics, besides a healthy attitude towards teamwork," says Kiran Nayak, Senior Project Manager, Indiagames.com. A basic knowledge of designing aspects such as colour patterns and designing tools is essential for a programmer as he would have to interact with the designers and almost the whole team.

To be a good multimedia programmer, needless to say, you should have mastery over at least one multimedia authoring system. An authoring system is basically a program which has pre-programmed elements for the development of interactive multimedia.

Director is one multimedia authoring software that has been around for a long time now and has made life easier for programming greenhorns as well as experts. Director can be customised according to one's requirements. With customisation, it is faster and easier to work with the various commands and templates, normally called libraries. These libraries are very useful as they help combine multiple authoring and tracking views, and project management functions that are associated with such authoring packages.

For any aspiring multimedia programmer, especially a Director programmer, a thorough understanding of Lingo programming is a must.

Lingo programming is the scripting language for Director, which helps in providing interactivity to the application. You can even do a certain amount of basic animation using Lingo in Director, though there are specialised software for high-level animations. A Lingo programmer is most sought after for any kind of development, be it game development, CD.

Two other popular multimedia authoring software are Authorware and Toolbook, with Authorware being the more popular of the two. A Macromedia product, this software is an all out logical tool that makes programming for CBT and generating quizzes a cakewalk. Authorware provides you with readymade code that you can drag and drop to control certain events in the package.

You should also know languages that work across platforms. Cross-platform compatibility is an issue with multimedia packages as such packages were originally developed for the Mac but are now used extensively on the PC as well. With the growing effectiveness of the Net as a medium and programs and applications becoming more Web-enabled, there is a growing trend for writing applications that can be viewed and worked upon various platforms such as handheld devices, Pocket PCs and wireless devices.

Flash is another software that is widely used for jazzing up the look and feel of Web sites. Scripting in Flash is still in the primitive stages

## Synchronised Multimedia Integration Language

The need for Web-based applications is growing and Synchronised Multimedia Integration Language (SMIL) is a great tool that allows Web developers to streamline huge audio-video applications in a lighter format on the Web. SMIL, pronounced as 'smile', sends the images, files, text and sound in a structured format. This means that though the files may be at different locations, their timing would be perfect when embedded in an application and would not hamper the speed of display on the Net, enabling the image to download faster. SMIL is the current standard incorporated in most browsers these days to enhance Web applications.

Learning SMIL is easy, as it is based on XML. It is in fact a mark up language like HTML and the coding procedure is simple and easy to understand and can be written using a simple text editor such as Notepad.

Its best utility can be seen in real audio and real video that work with Real player. For instance, you can pick a Flash file, convert it to SMIL and play it in a media player. It is a versatile tool for Web-based applications, especially when bandwidth is the major concern.

as compared to Director or Authorware. It uses Action Scripting for defining scene sequences, form inputs and other behaviour that are required to jump start other programme interfaces. The newer version, Flash 5, incorporates a fair bit of built-in scripting elements.

**Where do you start?**

Learning languages such as C, C++, Visual C++, Java and VB script should give them a good jump start in multimedia programming, as they form the programming core. These languages, coupled with Director, Authorware and Flash, are widely used for developing interactive CD-ROMs and Web pages. Knowledge of a visual programming tool such as Visual Basic or Power Builder (PB) would be an added advantage as it smoothens the transition to learning Director.

The same is true for packages such as Flash and Dreamweaver, which allow you to view the code and make changes accordingly. Besides, knowledge of 3D modelling tools such as 3D Studio Max and Elastic Reality are a must in today's multimedia applications.

**Where can you learn?**

Owing to the presence of a large market and a huge potential waiting to be tapped, there are several institutes that offer courses in multimedia programming and design. Major players such as Pentamedia and Arena Multimedia not only develop multimedia applications using state-of-the-art infrastructure and resources, but also offer training courses in this field.

Depending on which institute you choose, you could learn modules ranging from the very basic to high-end development applications; from designing Web pages to Web server application development such as ASP, JSP and PHP. Arena Multimedia (www.arena-mutimedia.com) offers good infrastructure and caters to almost all aspects of working with multimedia, which covers basic programming concepts of multimedia for graphic visualisers/specialists, Web page developers, and also covers 3D animation and high-end multimedia programming. Others like Edit Institute (www.editinstitute.com), Microcell India (www.microcellindia.com) and the Workstation (www.tasaa.com) also cater to these segments.

You can also learn on your own as there are many CBT titles now available in the market. New methods and models are being deployed to make the learning curve easy and interactive, by making self-explanatory and user-friendly tutorials. Pentamedia claims to have about 170 titles ranging from subjects related to IT, medicine and other informative topics.

Keep in mind, however, that though there are several institutes that would teach multimedia programming, it is up to you to show your versatility. It is advisable to keep your portfolio ready as that is your passport to success. The projects must reflect the kind of work you've been involved with and the diversified range of programming applications you are familiar with.

However, when it comes to judging an individual's potential, your portfolio will no doubt come in handy, but the usual practice is that companies will give you a small multimedia assignment (called real time testing) that you need to finish in a certain time. Companies do this because it is easy to generate code, modify it and pass it off as your own work. "This concept of real time testing is very handy as it helps the employer in judging the calibre of the candidate.



> The European markets are opening up and there is a good enough demand for multimedia professionals
>
> Rajiv Sangari
> Deputy General Manager, Pentamedia Graphics

With this, one can make out whether the candidate is strong in his fundamentals and can think clearly on the project given," adds Kiran Nayak. Moreover, while on the job, the programmer must be able to grasp the fundamentals easily and develop new techniques to improve work efficiency. Efficient use of libraries and templates go a long way in building effective source code. The programmer must also be able to judge on his own as to which source code would be the best for writing a program. Termed as 'smart programming' in a programmers dictionary, this is what makes a programmer stand out from the rest of the pack.

**The opportunities**

Now that you are armed with the requisite skills, where do you go? Well, opportunities abound for multimedia programmers in areas such as television, advertising, filmmaking, content development, and of course the Internet.

The advertising field has room for everyone, from graphic designers to layout artists to creative directors. You could start off as a designer or visualiser and grow to become an art and media consultant, studio manager or even a creative director.

The film and TV industry are the hotspots

Find it on digit interactive

**Hands-on**

Multimedia workshop on working with multiple devices, check out Mindware

where multimedia is used. Who can forget the high profile animation techniques used in *Jurassic Park* and high-end morphing techniques used in *Terminator* and *The Matrix*? Multimedia is also widely used in Virtual Reality, wherein complex mechanisms are represented in virtual 3D environments that seem almost lifelike. Multimedia and Virtual Reality are widely used in virtual design and visualisation, and sensory management applications. It is also used for training pilots through in-flight simulation techniques and to guide medical students through complex surgical operations. Architects and building designers make use of CAD/CAM and virtual walkthroughs in their presentations, all of which uses multimedia applications.

The education sector is another area where multimedia is used for developing interactive games, CD-ROMs and multimedia titles that provide you with fascinating information—how a pupa metamorphoses to a butterfly captured in all it's glory—in the most interactive fashion.

**The greener grass**

Though the recent slump in the US market has put the software industry in a tight spot, professionals in the multimedia industry report a growth. "It is in fact boom time as the European markets are opening up and there is a good enough demand for multimedia professionals, both designers and developers," says Rajiv Sangari, deputy general manager, Pentamedia Graphics.

As such, Indian talent is a major force to reckon with and people with the required knowledge can now diversify their talent to suit future requirements. "It need not be a US-based market. Major countries in the West (in Europe) are welcoming Indian talent and it is for us to tap this opportunity," adds Sangari.

"India is on the verge of an animation boom and the need for multimedia professionals is being felt like never before. Industry estimates say that the global digital animation industry is estimated to grow to a whopping $70 billion by 2005 from the current $25 billion," says Sumathi Sridharan, vice president-production, Pentamedia Graphics Limited. The multimedia industry is booming and it is up to the people to make use of the opportunity. Software programmers who are contemplating a career shift and are well versed in C and C++, need only sharpen their skills to suit the changing environment. The time and effort put forth by an individual in learning these languages can definitely be useful if efforts are channeled in the right direction.

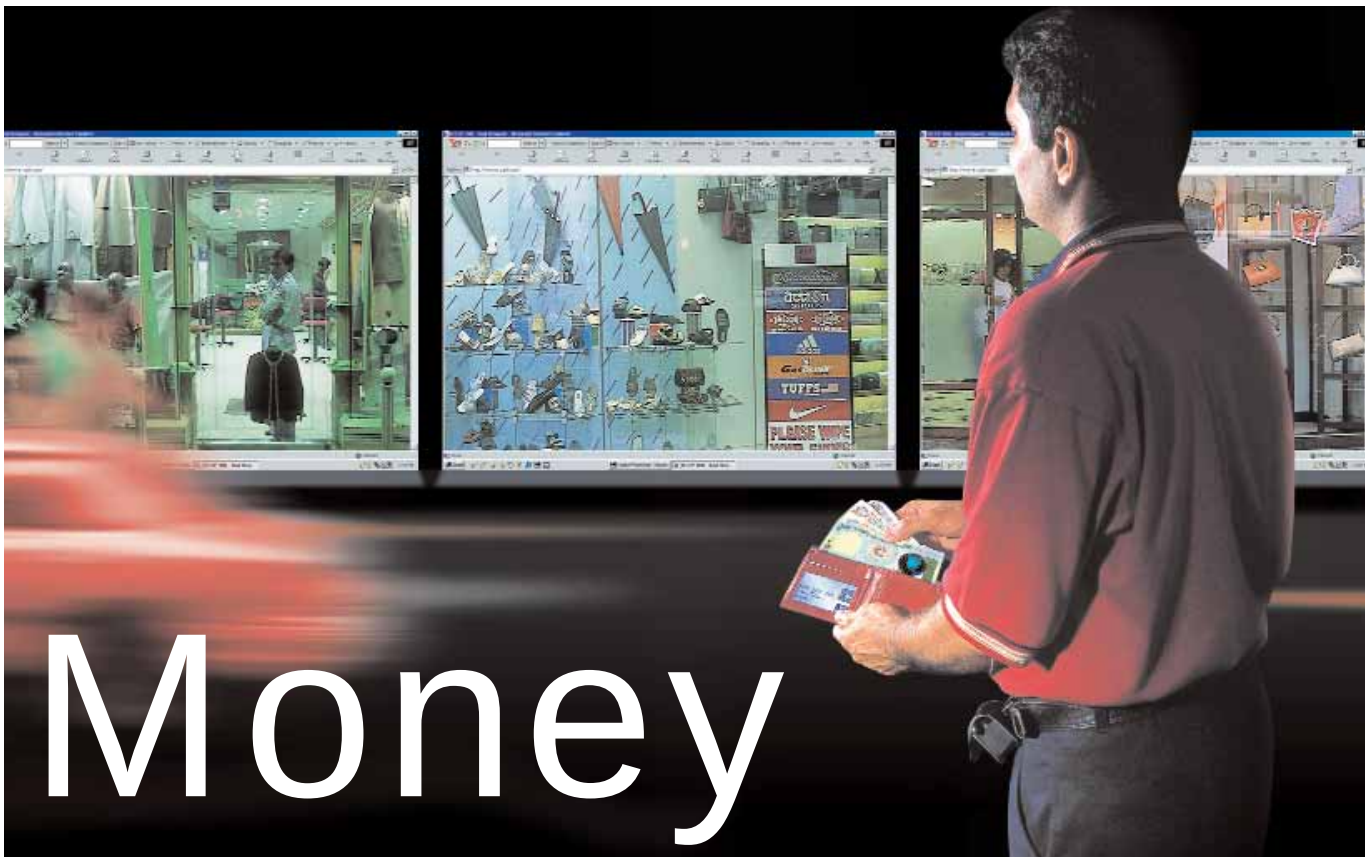
**Disclaimer:** Digit does not vouch for the quality of courses and training offered at any of the institutes mentioned here. Before registering with any of the institutes, it is better to check the credentials of the institute and aspects such as the training methodology and placement assistance, amongst others.

## Animating Media

What makes interactive multimedia so fascinating is the animation and cool effects that make the whole package alive. Basically computer animation is the process of creating moving sequences of images (such as cartoons and animated films).

There are usually four steps involved in creating an animation sequence: First, a storyboard is created to provide a visual script for the animation sequence. The next step is modelling, where the objects to be animated are created using software such as 3D Studio Max. The next step is scripting/movement control, where static images are manipulated. Finally, the animation is rendered, that is, the sequence is put together in its final form.

1/2 page Hor Ad



Photograph: Ashesh Shah, Imaging: Ram

# Money

makes the world go round. But can the same be said for e-cash? Read on and find out

Find it on digit interactive
Mindmatters
The best eBooks for your reading pleasure, check out
Mindware

ANIL PATRICK R.

When shopping in Singapore, you pay in Singapore dollars and in Hong Kong you of course pay in Hong Kong dollars. Right? Well get ready for a time when you pay only in e-money. In the age of the big 'e', it's but inevitable.

E-cash is a relatively recent entrant in the complex world of e-commerce. Very convenient and secure, it can be an alternative to traditional methods of online payments such as credit cards and even for offline transactions. Originally developed for e-commerce applications, e-cash has been around for about six years now. But is e-cash really everything that it's made out to be? Let's take a look at what e-cash is and what it can do for online commerce. Will it be good enough when dealing with online money transactions? Is it going to be the substitute of value for cash that we use to get things done in the virtual world? Is it ever going to replace paper money?

**So what is e-cash?**

E-cash or digital cash or E$, as it is known, was developed as a replacement for the traditional concept of money. It was also meant to have additional advantages that conventional money does not have. So how do you define e-cash? Well, there are so many definitions of e-cash that it's difficult to pick any one.

Basically speaking, e-cash is nothing but blocks of data that represent money. It is a payment message bearing a digital signature, which functions as a medium of exchange or value. This data can be transferred from one point to another via networks and can be traded as tokens to be exchanged for real money.

Exchange for real money was the original concept with which e-cash was developed, but now there are many e-cash providers who are trying to completely replace conventional paper money with e-cash. These entities intend to promote e-cash as a medium for obtaining products and services, just like real cash.

The digital nature of e-cash presents great possibilities for the future of commerce. E-cash is usually stored on computers or mobile devices. Some of the common forms are software 'wallet' programs that are installed in your PC. These wallet programs communicate with the bank or the e-cash issuer when a transaction has to be made. All the transactions are secured using complex encryption techniques. The transaction is completed after user verification. The value of e-cash required is taken from the buyer's account and deposited into the account of the seller.

E-cash does not necessarily require installation of programs, and can also be collected by browsing certain sites or by purchasing it with cash.

### E-cash stables

There are basically three types of e-cash available: anonymous and identified type, offline and online e-cash and smart cards. In the anonymous type, the transactions made by the user cannot be traced back to him. Money is credited from the user's e-cash account, but no one would be able to trace where it went. This is the most popular kind of e-cash in use now since it is similar to the paper money we use. In contrast, in the identified type it is possible to trace the transaction back to the user.

E-cash can also be online or offline in nature. In the online kind, the transaction takes place through an intermediary such as a bank or an e-cash provider, over a network or the Internet. The offline kind does not require the transaction to take place through a middleman and can be done without connecting to a third party.

Smart cards are yet another form of e-cash that are developing rapidly. Here, e-cash is stored in embedded chips, and the transaction method is similar to that of credit cards. The rising popularity of handhelds and other such mobile computing devices is a great boost to the future of e-cash. These will enable e-cash to be 'carried' around, much like carrying cash in your pocket or wallet.

### E-cash vs paper money

Similar to paper money, e-cash also works in a two–way stream in the real world. You can send to or receive e-cash from others. The anonymity that e-cash provides you ensures that your money cannot be traced back to you or the person who receives it. Unlike with credit card transactions, it is not possible for others to know or market your personal details on the Web from your e-cash transactions.

Let's face it, the Net is not a very safe place. As such, security levels are of the highest standards in e-cash systems. This is made possible using encryption and digital signatures. E-cash providers ensure that it is not possible to have digital cash in more than one location. This means that you cannot have the same unit of e-cash in your hard disk and your PDA at the same time.

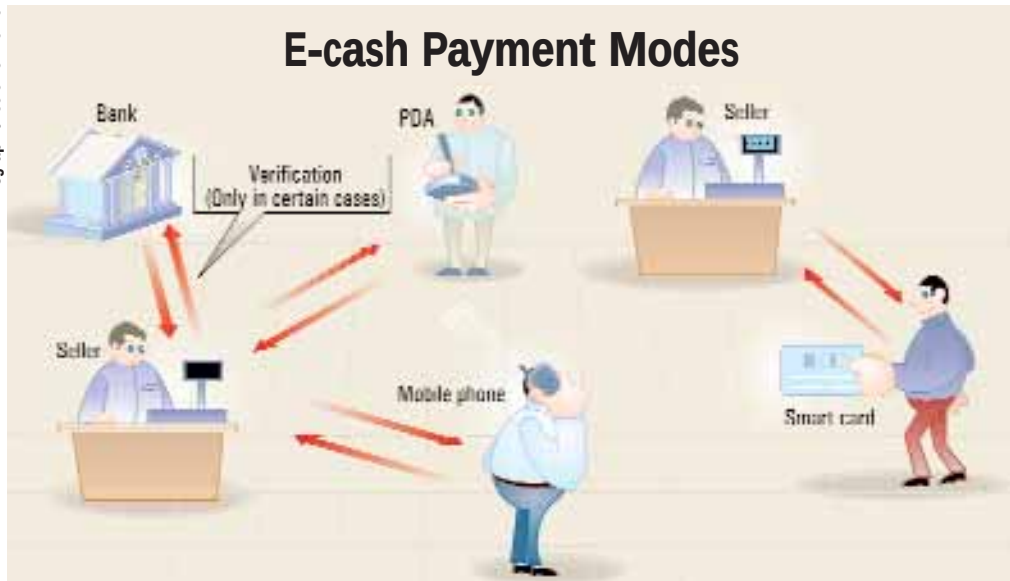
We all have heard and spoken about 'global communities' and such. However, currency still varies from country to country. So what's universal if we can't even get this right? E-cash has an edge in this regard since it is intended to be truly universal. For example, the e-cash you have in India is valid in Albania as well. Simply put, it gets things done for you anywhere in the world without having to convert your rupee into the local currency.

Another useful feature of e-cash is that it can be split into smaller units more easily than real money. This means that you would no longer have to hear tiresome lines such as "No change, sir" or "Please give me change" when you hand out a Rs 500 note. With e-cash, you can give the receiver the exact amount he needs. To add to this, e-cash is also 'age-proof' in nature. The digital nature ensures that the e-cash you have now will be valid even 50 years from now. It also does away with dirty and torn notes.

### Will it ever make it big?

Now for the big question: when is e-cash going to replace the paper money we use? Well, not any

**Infographic:** Solomon Lewis




You can pay for your purchases using a smart card as well as a mobile phone/PDA. You can call up the shop using the mobile phone about your purchase details, which is then validated if required, before processing. The mobile phone data packet itself carries payment details. Similarly, swipe a smart card at a shop and walk off with your purchases

## E-cash Bigshots

Two of the most popular e-cash sites are www.beenz.com and www.flooz.com. Both these sites work in radically different manners.

Beenz.com uses Beenz as the mode of transaction. No deposit of money or installation software is required to earn Beenz. Beenz.com has an Earn section, containing a list of sites that support Beenz.com. Users can earn Beenz points by visiting, registering, or making purchases at these sites. By clicking on the Beenz button on the site, the user can earn Beenz, which can later be used for buying stuff at sites supporting Beenz currency.

While Beenz.com requires customers to surf sites for revenue, Flooz.com requires you to pay up. You can purchase Flooz, the basic currency for online purchases, using your credit card. Flooz can be sent as a gift through e-mail. The receiver then registers at Flooz.com to get his Flooz account number and points from the e-mail. He can then use this account to shop at sites that support Flooz, which is available for use in two forms—for use by individuals or for corporations.

In addition to e-cash sites, major players such as Microsoft have stepped into the arena. Microsoft's latest operating system, Windows XP, comes with Passport, a kind of e-wallet that stores the user's credit card information on his PC, which he can later use for secure and easy online transactions. American Express, MasterCard, and Visa have also come out with a range of smart cards for online transactions.

## Looking in Bangalore

You are way off the mark if you thought e-cash was unavailable in India. Many Indian Web sites have been toying around with the idea of e-cash for quite some time now. One of them that managed to get it right is www.lookforgreen.com. This Bangalore-based site makes use of Green cards, which you have to buy from retail outlets. While the registration of user accounts is free, the accounts are charged through the Green cards. These cash cards are available in denominations of Rs 100, Rs 250 and Rs 500.



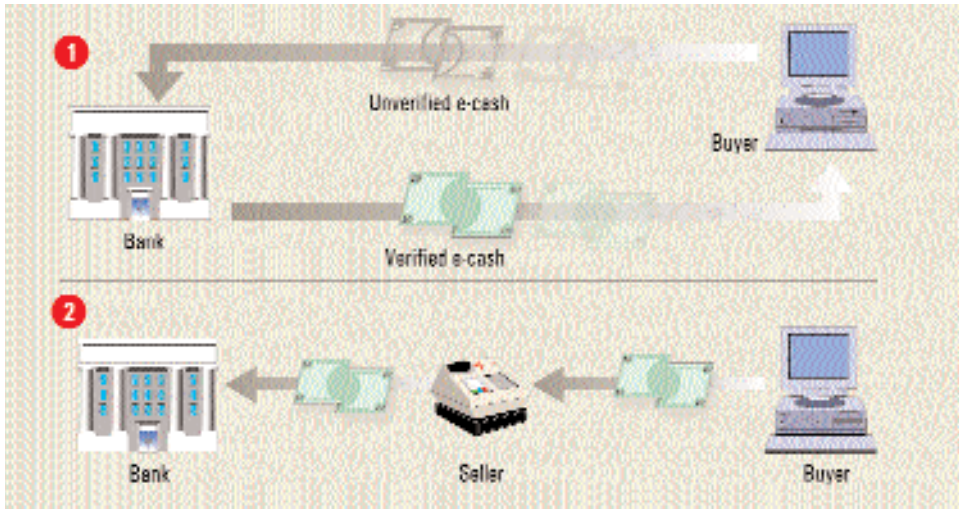
One Green is equivalent to one Indian rupee. After getting the card, you can charge your account by logging in and entering the value code on the card.

Lookforgreen.com has tie-ups with major Indian portals such as Fabmart, Rediff, Archiesonline, Egurucool, Sifymall, etc for online shopping. These sites support payment using the Green system. The money is withdrawn from your account when you enter your account information using the Green icon on the site. The site also facilitates the transfer of Green from your account to another account. As of now, the retail shops that you can buy Green cards from are available only in Chennai, Hyderabad and Bangalore.

## Micropayments

When you need to make small payments, say, Rs 3 for vegetables or Rs 19 for a single MP3 track online, you wouldn't generally use credit cards to pay up. Why? Simply because the service charge of the credit card provider on the transaction is more than the price. To add to that, the process is complex. No one wants to sign a bill or fill up a registration form for a small transaction.

Micropayments is a concept that was developed for payments below $5. It is a slight variation on the concept of e-cash, with similar advantages of anonymity, security, etc. The difference is that here an intermediary is required (say a bank as in figure 1) who processes the transactions and deducts it from the user's account. All transactions between the two parties have to go through this intermediary.




**Infographic:** Jaya Shetty

time in the near future. It will take at least six to seven years before e-cash can replace the money standard in online transactions. There are several factors inhibiting the growth of e-cash at present.

The first block to e-cash is acceptance. Why is paper money so popular? Simple. Everyone accepts it. Anywhere in the world, paper money is the standard means of trade. Credit cards have been around for more than 30 years but still haven't been able to replace cash completely. Before you conduct a transaction, you need to ensure that the store accepts the credit card you use. The same is true for e-cash. The e-cash that you receive from Flooz.com would not be valid for purchases on sites that support Beenz currency.

This brings us to the issue of common standards. As of now, there is no single, universally acceptable standard for e-cash. Some e-cash providers give it out in the form of gifts, whereas others require you to purchase it. Till the time that e-cash providers come up with a common standard by which an issuer's e-cash units are accepted by others, the future of e-cash looks bleak. However, many e-cash providers are working together to solve this problem and if they pull it off, e-cash will become a reality.

Next comes the question of ease of use. Come on, how many of us would like to go through the tiresome process of registering and logging onto sites when we need something as simple as a book or a shirt? Most people would prefer to pick it up from the corner store. Simplicity of use is of paramount importance before e-cash makes it big.

But the biggest blow is yet to come. Governments and banks simply do not like e-cash! Why? They object to the anonymous nature of e-cash transactions. It would be very difficult to prevent tax evasion and money laundering if e-cash transactions were to become common. This in a way explains why e-cash is taking so much time to develop.

The software slowdown has proved to be yet another spanner in the works as far as e-cash is concerned. One of the major casualties was the e-cash pioneer DigiCash, which downed its shutters recently. Even big names such as Flooz.com and Beenz.com are having a hard time surviving. How much these e-cash issuers are going to pick up or whether they will even survive is yet to be seen. At present, it seems as if this slowdown is going to set the growth of e-cash back by at least a couple of years.

Well, nothing did ever come easy and these roadblocks could be seen as part of the evolutionary process for e-cash. E-cash providers are sure to find a way out of these thorny issues. So keep the faith folks, you may soon be changing the way you shop…with e-cash!

Illustration: Ram




# Computing the GREEN way

New technology and better products hit the market every day. But what happens to the old PC, CD or printer that gets junked in favour of a new and better product?

VIDYARAMANAN S.

Have you ever wondered what happened to that old 486 computer that once occupied pride of place in your dad's office? Did it ultimately end up in some landfill, or was it burnt in a rubbish dump, adding to the growing pollution in our world?

Approximately 20 million personal computers were discarded as obsolete in the year 1998. Most of these were dumped and just 6 per cent were recycled. Due to rapid developments in computing technology, the rate at which PCs are sold is increasing by 15 per cent rather than the estimated 5 per cent each year. The average age of a computer now ranges between three to five years. If PCs become obsolete at this rate and are not recycled, according to a study conducted by the Carnegie-Mellon University, there will be about 150 million PCs headed for landfills by the year 2005.

Needless to say, a PC is not a biodegradable object. With sales of computers increasing and older ones being discarded for new pieces, we need to spare a thought as to how all the discared machines are disposed of.

Taking heed of this, firms such as IBM, Dell and Sony have started recycle-and-reuse programmes aimed at reusing older equipment for producing new computer products. This reduces the need for raw materials required to produce new products and we gain resources that can be used for manufacturing other products. But most importantly, this means a healthier environment.

### Into the recycle bin

Disposing of computers by burning them or dumping them in landfills cause long-term damage to the environment. As a lot of toxic materials go into the production of PCs, burning them might release poisonous fumes into the atmosphere and if dumped into landfills, harmful

## In the Design of Things

Universities all over the US have started greener initiatives. Carnegie Mellon University has started a campus-wide programme called Green Design Initiative. The programme works towards environmentally conscious engineering and production. The University has partnered with industrial corporations, foundations and government agencies to work on advanced research methodologies for a sustainable development.

Green Design Initiative is doing research in specialised areas to aid the electronics industry to incorporate environmentally sound technologies in the production of their equipments. Green Design also encourages students who are interested in environment-oriented courses.

The consortium led by the Carnegie Mellon University does research on recycling computers and has identified that a large amount of electronic debris comes from the usage of computers by businesses. Studies have been conducted by the university for making a statistical analysis of how many computers are being dumped in landfills and how many have been recycled in the recent years. The research programme aims to reduce environmental damage by lowering hazardous material discharge, minimising the use of non-renewable resources and by reducing the usage of renewable resources to sustainable limits.

chemicals might leach into the ground water. The best solution therefore is to recycle them. Monitors, keyboards, motherboards and other peripherals such as floppies and CDs are all recyclable.

Let's take the case of monitors. Metals present in the printed circuit board and inside the housing of the monitor are recycled. The housing itself is shredded and used to make a special material, which is used to fill potholes. Most monitors have a cover of lead over the screen, which can be reused. Flat panel monitors have mercury lamps, which are used to backlight the screen. One of the most hazardous metals, it can be reused as a raw material for manufacturing newer flat panels.

Recycling monitors is what Total Reclaim, a Seattle-based company does. The plastic casing that covers a monitor is sent to a processing zone to be pelletised. These pellets are then used as feedstock for newer components or casing production. The CRTs are smelted and reused for making newer monitors. R3PC is another organisation that has entered into monitor recycling. Here, the monitor's casing is sliced out using a plasma cutter and is recycled. CRTs are pulverised and separated into leaded glass, metals and trash. All other parts are ground and sold to recyclers, who use these as raw materials to make new products.

### Separating the chaff

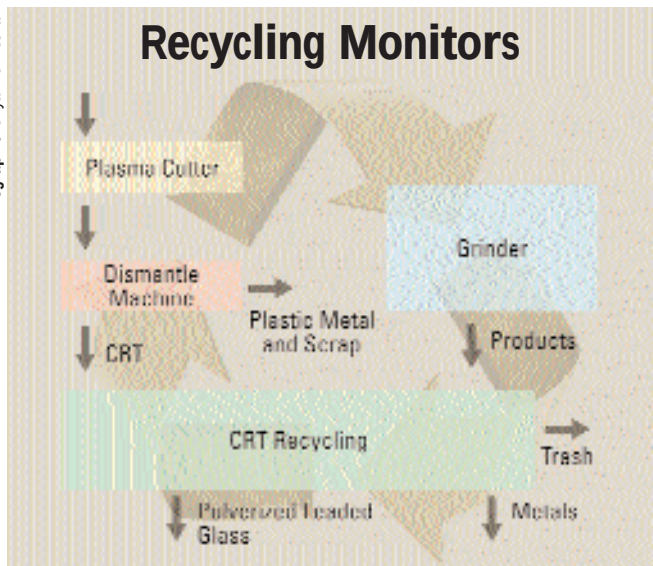
But what about a motherboard, you ask? A typical motherboard will have copper, silver and gold besides stains of heavy metals such as antimony, chromium, zinc, tin and lead.

California-based Fox Electronics recycles the most advanced processors to the cheapest component. The resistors, capacitors and other components are removed by de-soldering them from the motherboard. The chemically treated board is ripped off its ICs and is smelted again for producing powder, which can be reused to make motherboards and other PCBs.

Keyboards are cut along the seam using robots and are then separated into plastic and metal board. The plastic is melted and is turned into pellets for further use.

### Going to CD

Computer peripherals such as floppies, CDs and others can be recycled similarly. According to




**Infographic:** Shyam Shirsekar

The monitor casing is sliced using a plasma cutter, and is then recycled in different processing zones. The CRTs are pulverised and separated into glass, metals and trash before recycling

## Safe Disposals

Although the CD has been a major invention as a portable storage media, disposal of corrupt and unsold CDs is an issue. Most CDs are manufactured from polymers, which are difficult to dispose.

A UK-based company, Polymer-Reprocessors Limited (PRL), is working towards recycling CDs and their jewel cases for making newer materials. PRL has created a system to recycle CDs and their cases for use in newer applications. Some of Europe's largest international music companies have joined hands with PRL in this environment friendly approach towards recycling CDs and their cases.

The CDs, along with their packing are separated into components such as paper, plastic, CDs and cases. The cases are granulated and fed into an extrusion system fitted with a laser for the removal of any contaminants. This process produces high quality crystal polystyrene pellets, which are used in making artificial wood, insulating foams or even CD cases once again. The discs are recycled using a specially patented recycling machine, which removes the paint, aluminium and eventually the data. The cleaned disc is granulated and the outcome is high-quality injection moulding grade polycarbonate, which is used in a multitude of applications—in the production of burglar alarms, streetlights, lenses, etc.

PRL is also working towards recycling DVDs, video cassettes, audio cassettes and tapes and computer reels.

## Recycle or Reuse

There are other alternatives, besides recycling computers. For instance, charitable organisations collect them and after they are inspected, consider them for reuse. It would be a waste of resources if you recycle a working computer. Though slower speeds of older machines might be considered a hindrance for commercial or scientific organisations, they can be used in schools and other institutes for educational purposes where speed is not the main criterion.

There are several organisations working with this idea. In India, Mumbai-based FORCE (Foundation for Computer Education) collects surplus or obsolete computers from corporates. After inspecting them and repairing them if necessary, it gives them to schools and colleges registered with the organisation. Notably, a second-hand computer is not a rare thing in India. Computers are seldom discarded in India, unless of course it has reached a point of no return. In fact, many hardware shops in major cities carry out a thriving business refurbishing old computers.

Most states in the US have at least one reuse programme, which caters to the need of local schools for computers. These organisations collect obsolete equipment from big business organisations, refurbish them and donate them to the needy schools.

Students Recycling Used Technology (StRUT) is a specialised programme in which the participating schools' students evaluate donated computers and decide which components can be reused and which recycled.

industry estimates, PC users trash approximately 4 million floppy disks everyday. This magnetic material takes between 450 to 500 years to get degraded. Hence, companies all over the world are working towards greener initiatives for recycling floppy disks.

GreenDisk, founded on World Earth Day takes all discarded disks to their plant in Columbia, where the media is fully inspected and magnetically erased. The disks are then disassembled and the metal and plastic components are recycled to make new disks and other items. To date, GreenDisk has recycled more than 20 million disks. Thus, software companies are also benefitted—they don't have to pay for dumping the outdated packs and are relieved of the storage costs.



Scientist at PRL working on recycling

### Old goods for new

Computer manufacturers are introducing schemes wherein users can exchange their old computers for new ones. In turn, the manufacturers recycle the PCs that they receive from their customers. IBM, Intel, Sony and HP are leaders in this arena.

Recently, HP announced that it would accept used equipment of any manufacturer for recycling. HP recycles almost all components such as inkjet supplies, laser jet supplies, and other hardware that it receives from customers and from within HP. Till date, HP has recycled around 39 million laser jet cartridges and it has reduced the use of plastics in the production of cartridges by 44 per cent, allowing them to be easily recycled when trashed.

Products that are produced from recycled plastics include buttons, plastic trays, tractor feed parts and other items used in the production of printers and its components.

HP Inkjet products are also recycled to produce automobile parts, trays used in microchip fabrication processes, copper wire, steel plates and other precious metals used in electrical and electronic equipment. Other parts, which cannot be recycled, are disposed of in an environmentally safe manner. The company has a separate section on its Web site for selling refurbished products, which are priced lower than ones that are not.

Sony, another major player in the electronics industry, has also joined the green movement. It is operating in conjunction with the state of Minnesota (US) to find the best strategies to dispose of electronic waste safely. The plan is to collect material, find economically feasible methods to recover value from them, and use these strategies for drawing inferences for future operations.

IBM, the big blue, has also offered its individual consumers and businesses a means to recycle their outdated hardware. Using this service, you can recycle any brand of PC (and this includes monitors, printers and other peripherals) for an economically feasible price of $29.99 (approx Rs 1,300), including shipping.

Envirocycle is the name of the dedicated recycling unit based in the US. The company tries to make the maximum possible use of a PC and its components. Repaired PCs are donated to Gift for Kind International (GIKI), a charitable organisation that contributes to over 50,000 non-profit organisations all over the world. The PC recycling service can be purchased from IBM when buying a new IBM PC as a standalone service.

### Is the future green?

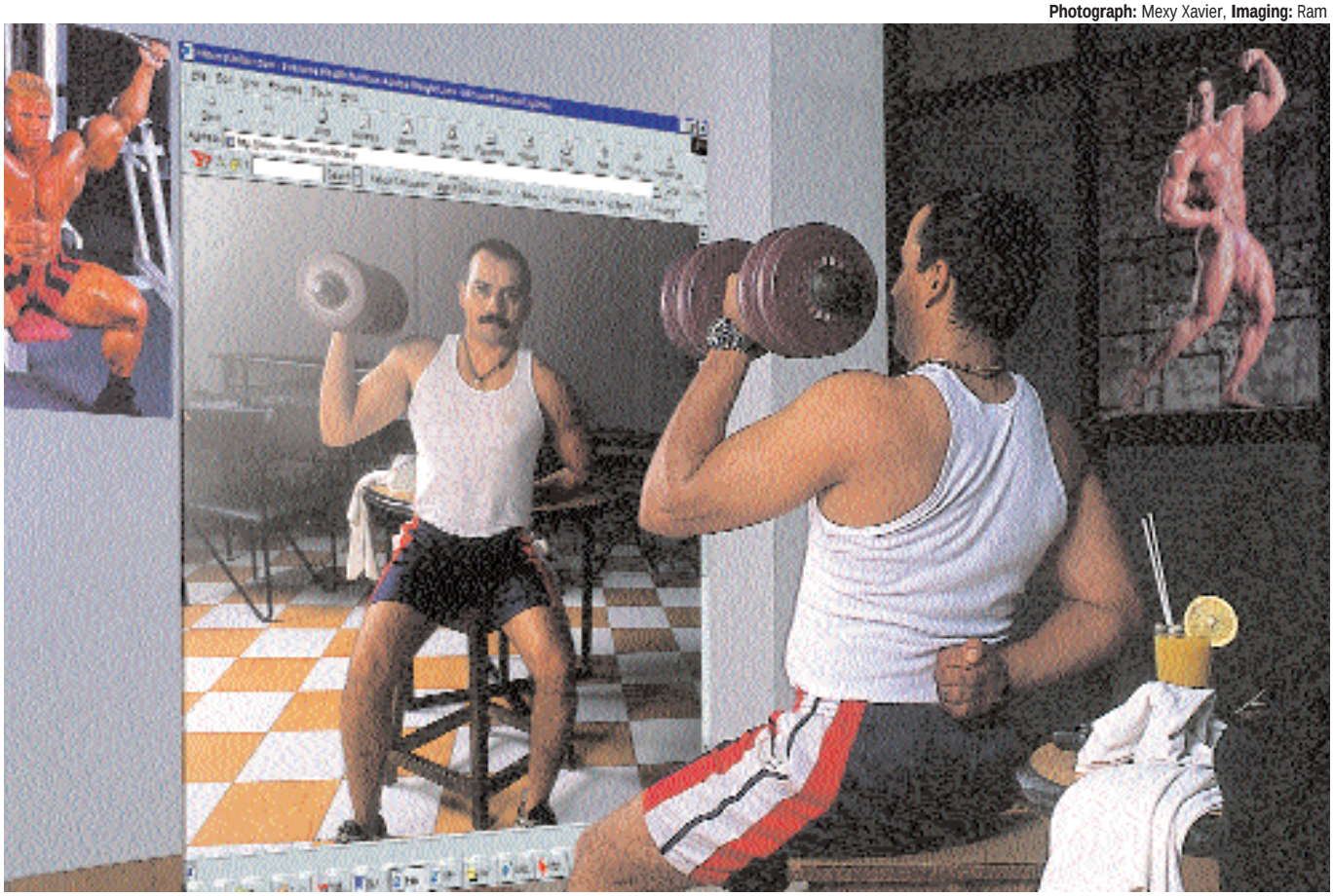
Reuse? Yes. Recycle? Yes. If not either, then what? One answer is to dispose things in an environmentally safe way. Besides, we can think of ways to reduce the utilisation of toxic components in the making of a computer. Redesigning the PC could be the best alternative that would aid recycling in the future.

However, there are some obstacles that make this task slightly difficult. For instance, lead is used in monitors to prevent radiation and hence cannot be drastically reduced. Its use in the front panel of monitors has been virtually eliminated, but the industry has been less successful in doing away with the metal in other parts of the monitor.

Though the introduction of flat panel monitors would gradually reduce the use of CRTs (which have lead), it would result in the introduction of the equally toxic metal, mercury. IBM has reduced the amount of screws, bolts, plastics and glues in the making of its products, which will make it easier for recyclers to disassemble and process old computers.

But there will still exist an element of pollution, which cannot be fully removed as long as computing technology plays a vital role in our lives. It might be next to impossible to make all computer components pollution free. We'd have to either reduce the usage of computing technology or find ways to dispose them in an environmentally safe manner. Since the former is not possible in the digital age, we must recourse to the latter.

**Photograph:** Mexy Xavier, **Imaging:** Ram



# FIT online

Want to train to look like a Greek god without going to a gym? Health and fitness Web sites might be the solution

ANIL PATRICK R.

It's raining like there is no tomorrow and you don't feel like letting go of your bed. But you are guilt-ridden, for your early morning session at the gym awaits you. You hate staggering to that place each day at some unearthly hour and the thought of bouncing up and down with all those people with perfect bodies and a tyrannical trainer puts you off mightily. "If only they would give me an exercise routine that fits me," you groan. And it's not your dimensions alone that you are worried about. You are trying to kick off your nicotine addiction. Hang on, help is close at hand. The Internet brings you a host of personal trainers and health counsellors. Worried about the costs that they charge? Relax. Most of the services are free. So why not turn down the health road?

## Fit ware

If your question is about what these sites have to offer you, the answer is almost everything related to keeping fit. The most common tool that health sites offer is the fitness and diet scheduler. This tool maps your workout and diet over a certain specified period set by you or them. And if you are trying to break the habit of sneaking off your schedule, this tidy tool helps you keep a record of how true you have been to it. These fitness reports are also available as graphs or assessment reports in most of these tools.

Many sites allow you to keep your health profile online. They provide you with an assessment of your health condition based on your profile and often assess your risk factor for various diseases as well. You can even consult experts on the site regarding your health queries. Most of them provide interactive calculators for almost every aspect of health and fitness. These calculators help you check a range of health-related issues, from checking your fitness level to finding out your risk for cancer.

## Health first

One of India's premier hospital groups, Apollo, has a Web site devoted to health care. Check out www.apollolife.com and make use of their experience

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**Indiasites**
New Indian sites
**Sitemap**
Masti.com, check out
**Playware**

and expertise in health and fitness. The site requires you to register, which involves creating a personal profile. After this is done, it's time to log in. One of the best tools that the site offers is My Health Scan. This involves answering a questionnaire of more than 40 questions about your health and habits. On submitting the answers, you get a profile of your health and how you can improve it. The health scan has sections on exercise, nutrition, stress, cardiac risk factor, cancer risk, etc. For example, checking the exercise prescription will give you the present status of your exercise schedule and advice on how you can improve it.

Calorie meter is another useful tool that the site has. Based on parameters such as height, weight, etc, it calculates how many calories you need to burn in a day. After you answer a series of questions, it determines how many calories you actually burn. This helps you alter your fitness schedule accordingly.

E-consultations is another neat feature of the site. It has two sections, MediXperts and NetCliniq. MediXperts allow you to consult an expert doctor online, but this service is not free. NetCliniq lets you consult an online doctor free of cost who gives you answers to your health related queries. Some of the other tools provided by Apollolife are the 'Are you fatigued?' test, Waist Hip ratio, and tools to determine stress at work. Message boards and health chats let you discuss problems that you may come across with other visitors to the site.

### What the doctor ordered

Ever wondered how fit you are? Or how much you spend on smoking or your level of nicotine addiction? Drkoop (www.drkoop.com) has all the tools you need.



Drkoop.com: all you wanted to know about fitness

You can use the Exercise risk calculator in Drkoop to check out if you are really fit enough to exercise. This will help you determine if you need to see a doctor before starting on an exercise regimen, however mild it may be. Check out how vulnerable you are to heart disease, HIV, diabetes type II and asthma, using the risk assessment calculators.

Worried about your kid's habits? Drkoop has tools to examine if your child is susceptible to alcohol and marijuana addiction, or has suicidal tendencies. Sign up at the My Health section on this site to customise the site to your requirements.

On the fitness front, Drkoop has tools to calculate calories burned and waist to hip ratio. You can find out if your diet is perfect using tools such as carbohydrate, protein, fibre, and fat intake calculators. The section on general health has information on depression, cost of smoking, nicotine dependency, cholesterol reduction and sleep requirement calculators.

### Nexercise

Asimba (www.asimba.com) is a health and fitness site that claims to be capable of serving you irrespective of your present fitness level. It has programmes that cover people at all levels of fitness—from couch potatoes to those training for the Olympics. One of the best tools it has is My Training & Nutrition Log, which helps you chart and maintain your fitness goals. However, you have to be a registered user to make use of the services that the site provides.

Before striking out on your fitness path, stop a moment and assess yourself with Asimba's calculator tools. They can tell you how you can charge your body before, during and after a work out, as well as find your maximum heart rate. Other similar tools include those for finding the body mass index, resting metabolic rate, and daily caloric requirements.

The best feature in Asimba is that it lets you sign up for free training programmes for various sports and fitness activities. These programmes range from the relatively basic walking and running to those at the other end of the spectrum such as adventure racing (biking, cross-country running, etc) and triathlons. These programmes are of varied duration—from two weeks to eight weeks or even more. Asimba's fitness trainers send you each day's schedule on the day before the workout or on the day, as you specify. In addition to these free services, Asimba also has programmes that you have to pay for. These are highly specialised programmes that most of us won't be requiring anyway.

After choosing a workout plan tailored to your health profile, you have to keep a tab on whether you are working out right. Fitnessonline (www.fitnessonline.com) is the answer. It has lots of information for both sexes on working out correctly. The usual tools are there too—tools to calculate body mass index, ideal weight and calories burned. There are sections that cater to mental and physical health, adventure sports, and a guide for buying health equipment. However, it's the information on working out that is best presented. Information available includes getting in

## Look Before you Leap

Hold on for a moment before plunging into your new fitness regime. There are some essentials you need to be aware of.

First of all, know your present state of health. Not everyone can jump into an exercise routine and go all out. To find out your present fitness level, it's not enough to use the online health scans offered by most health sites. If you are over 35, a complete physical examination is also recommended. This helps you select the right fitness plan and helps you maintain an online medical record. This record will also help the site tailor a fitness routine to your specific needs.

The next thing to be aware of is the cost of the fitness programme you choose. While most are free, there are some programmes that require you to pay up. Before you give your credit card number, make sure that the transaction will be secure. Most secure sites have a small lock icon at the bottom right-hand corner, or certifications like VeriSign.

Many of the sites offer diet planning tools that have been designed keeping the Western diet in mind. So if you find your *rotis* and *parathas* missing, don't worry. Most planners have food databases from which you can add the missing foods. In case you are unable to find a particular food in the database, they also provide for addition of new items. You can add the food that you want into the database. In this case, you will have to give the nutrient details of the food.

## MD on the Web

www.webMD.com is an all-rounder of a site. This health site covers almost every health aspect, from working out to eating right to information on diseases. Starting out with webMD's services is easy. After registering, you could create a health profile using the MyHealthRecord tool. This helps you create a comprehensive medical record on the Web. Besides, the record is necessary if you want to access tools such as To-Do's to keep track of your health schedules, Health Risk Appraisal, and Immunization Planner.




Time to do a little stock-taking—check out your body mass index using the BMI calculator. Now is the time to call for your personal trainer using the Diet and Fitness Journal. Select the Sports and Fitness link from the Health and Fitness section on the left-hand side column. Now click on 'Health e-tools for your fitness'. This section contains tools such as calculators, interactive tools, and slideshows. Some of the calculators available are BMI (Body Mass Index) calculator, calorie counter and target heart rate calculator. The Diet and Fitness journal is for use only by members. Fill up the profile and you get a personalised nutrition plan. The journal allows you to record your exercise and diet schedules. Charts showing your progress over the days help you monitor your goals.

## Charting your way with Asimba

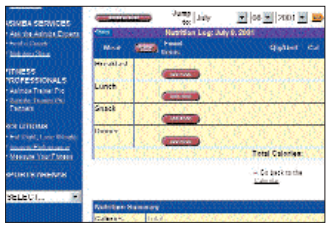
Assuming that you've registered at Asimba, let's get your training and nutrition log in order. Click on the Training & Nutrition Logs link under the Asimba Tools section on the left-hand side of the page. You will have to log in for this.




Clicking on the Go to my Log link in My Training & Nutrition Log takes you to your log calendar. Now select the Update Preferences link under the calendar to update your preferences. Fill up the general information. If you are into strength training, select the exercises you usually do. Click on the Done button at the bottom of the page to save the settings. Use the Preferences link to specify the number of repetitions you do while strength training. Use the tabs to select the next aspect. For example, if you want to enter your diet preferences, select the Nutrition tab.




Use the Add Food buttons to enter your food preferences. You can also remove meal items using the Remove Items button. Other tabs in Preferences are Fitness and Health. Click the Go Back to the Calendar link when you are through. Clicking on the Reports tab in the main calendar gives you a report of how true you have been and how much you have gained on the fitness schedule. The Graphs tab gives you a graphical log of how you have fared.



shape, losing weight, adding muscle, proper diet, pregnancy care, etc. Online advice from experts on fitness and pregnancy-related issues is also available on this site. You can either read through the section or submit your doubts, which will be answered by experts.

### To diet for

Cyberdiet (www.cyberdiet.com) is for those of you who want to lose weight or simply get into shape. Daily Food Planner allows you to enter your target calorie count for a day. It will then give you a list of meal items with their calorific values from which you can select the ones you need.

The section, Eating Right, gives you the nutrient details in each food item so you don't have problems figuring out what and how much to eat.

Signing up with Cyberdiet's health club equips you with your own nutritional profile.



Cyberdiet: planned nutrition

Here you can design your diet around your targets and chart a nutrition plan based on whether you want to lose, maintain or gain weight. It also provides exercise programmes at the beginner and intermediate levels, interactive tools, and support groups. The site even has exercise logs for various activities such as aerobics, flexibility, strength training, and workouts.

### Get set, go!

So if you've got the drift, it's high time to move away from your sofa and that remote. Go ahead and discover the better, fitter person hiding inside you. With all these sites and the tools they offer you, you ought to have a good fitness routine lined up. Just get that body moving, those calories burning, and kiss your adipose deposits goodbye.

### http://www.

***http://health.discovery.com***
Gives you health information in one go
***http://health.yahoo.com***
Tools for dieting, fitness and even a 'Ask the Doctor' service
***www.healthcentral.com***
Information on health and fitness topics
***www.intelihealth.com***
Health quizzes and food and nutrition tools

**Photograph:** Jiten Gandi **Imaging:** Ram



# Talk SHOP

Shopping for a digital device is no fun and games. So take your shopping seriously and pay attention to what other proud owners have to say

NILESH KAKADE

It used to be about *phoren maal* once upon a time—the imported car, the gold watch and electronic goodies. But all that is easily available in India now. So how do you get to be one up on Mr Gupta?

You, of course, flaunt your tech-savviness by casually fishing out a Palm device to check your appointments and read e-books or talk knowledgeably about the music scene and Napster as you listen to music on that cool MP3 player. And at parties, you capture the moment with a digital camera and generously send the images to all your friends by e-mail.

But before you go out to satisfy your ego drive, ready with a bundle of cash to buy the funkiest digital accessories around, take heed! Shopping for such hi-tech gadgets calls for more than mere window-shopping. With the combination of looks and performance that these gadgets pack, there is quite a bit of work that you should put in before getting your hands on one!

### The window dressing

First, you need to figure out the different choices available to you. There are plenty of Web sites that give you information about buying trends all over the world as well as detailed reviews of products, which can help you make an effective buying decision. Several magazines, TV shows and newspapers also have sections that display the latest products, though it probably makes sense to pick a magazine or Web site that can give you detailed information on the various brands and models available. "Getting to know about the latest digital cameras is not difficult if you watch Discovery, CNN, BBC, etc. They show you all the latest gadgets," says Sandeep Sheth, an avid technology enthusiast.

After you have a list of the various products that exist, and have set your mind on one, the next step is to figure out which features are really important to you. "I saw the Rio Volt portable MP3 player on Cnet.com in a review of the top five MP3 players and was bowled over by its cool features. It can play songs in the MP3, CDA and



Fabmart.com: A shopper's virtual stop

## Look Sharp

While shopping for electronic gizmos there is always a chance that you might get conned while buying a certain product, or that the shopkeeper may get a little apprehensive giving out information as most of these products are either smuggled or attract high import duties. It is therefore advisable to check out various shops and locations other than regular shopping zones so as to get a better idea of the products and prices available. While the dealers seem more than ready to sell their wares, a bit of probing about the products gets them a little jumpy at times. Normally at these places you have to pay in cash as credit cards are usually not accepted. A closer examination of the product is usually greeted with shifty eyes and words such as "trust us, we only deliver the genuine and best quality items". As far as after sales service is concerned, you might be able to get some alterations in the servicing and technical help contracts, but never expect your product to be fully exchanged or replaced.

WMA formats", says Suhasini Ahluwalia, Marketing Director at O'Reilly & Associates.

Do you really need to have the latest, most expensive model, or is there another deal available that works well for you? Once you have figured out what you want in your MP3 player (for instance), you can then make a shortlist of the models that offer these features and then try and get closer look.



"I saw the Rio Volt MP3 player on Cnet.com in a review of the top five MP3 players and was bowled over by its cool features"

Suhasini Ahluwalia

Marketing Director, O'Reilly & Associates

### Try it before you buy it

Those of you who have actually gone out and tried to buy one of these devices could probably vouch for the fact that this can be quite an experience. Obviously, before spending the pretty packet that many of these cost, you'd like to make sure that you have the best deal available. For that you'd have to find a reliable store with the latest stock.

For instance, if you're looking for a digital camera that allows you to shoot all the photographs you need and store them on your PC or a CD-ROM drive, then the first place you should look is probably one of the many PC retail stores. Many of these stores display entry-level digital cameras and Web-cams offered by brands such as Logitech and Intel. There are a few up and coming stores that offer a wider selection of brands, but these are few and far between. Agrani Convergence Ltd has recently launched a couple of Switch stores in Delhi and Bangalore, which aim to become a one-stop shop for technology products and services.

However, if you are really particular about the brand or model that you want, you could probably follow the example of Steven D'Souza, a hi-tech gadget enthusiast, who decided that he simply had to get his hands on a digital camera and decided on a Sony Mavica MVC-FD 73. "I finally managed to buy it at a huge electronics market in Saudi Arabia," says D'Souza. Most of you who know specifically what you want will find that the best solution is probably to pick up the gadget yourself during a trip abroad, or just ask a friend do it for you. "I am thrilled with the performance of my camera and am convinced that I made a good choice," quips D'Souza.

### Taking the plunge

Once you have decided on a particular model, you need to keep certain things in mind. One of the first things you should consider is price. While it might seem a lot cheaper to buy an iPaq handheld from the US, there are a few things that you need to be careful about. The warranty in most cases would probably not be applicable in India, which means that the product should come with an international warranty, which will ensure that you could get it serviced in India. Always a matter of concern, however, is the availability of spares. Getting a replacement part for newer models can take some time and spares for older models can also be difficult to obtain. People who bought laptops a few years ago will be familiar with this situation. However, the situation will improve over time as more of these products become available in India.



Circuitcity.com: A haven for techno products

Another option that you have is to place an order with a company or stores based in the US. You can make a selection on a Web-based store and have the product shipped over to India. The product is sent over via a courier service and you could pretty much have it delivered to your doorstep, though shipping charges will be extra. Compusa.com, Circuitcity.com, Computershopper.com and Egghead.com are a few sites that allow you to do this easily. Of course, you need to have an international credit card to make use of these

## Shopping Checklist

Look out for these while shopping for electronic items

- ✔ Do your research thoroughly and check the genuineness of the product
- ✔ Insist on a warranty card
- ✔ Read the clauses in the agreement
- ✔ Demand after sales service
- ✔ Ask a couple of people before buying a certain product
- ✔ Check the authenticity of the product and the distributor/retail store/outlet

sites. And don't forget the customs duty either, which can be pretty hefty.

**Buying in India**

For you techno freaks out there who simply must get your hands on the Nomad II MP3 player as soon as it is released, the best solution is still to purchase it from abroad. If however, like most people, you want to ensure that you can avail of after sales assistance in India, you should stick to the Indian distributors for these products.

Most of the brands already present in India, such as Sony and Kodak for digital cameras and Creative and D-Link for MP3 players, offer these products through the same dealers and distributors that already offer computers and peripherals. The availability, however, is quite unpredictable and the prices tend to be on the higher side. Some retail stores stock these products as well.

A few Indian sites that allow you to purchase digital products online have also made an appearance recently. Fabmart.com has a section that offers computers and related products. You can pay for the products in rupees or with an Indian credit card, which is pretty convenient. Products are shipped to you via courier, though charges vary according to products and locations.

In time you will probably be able to purchase directly from the manufacturer's own stores. Compaq, among others, has an online store (Cooldukan.com), which offers laptops and desktop computers. You can expect these sites to eventually start offering products such as the iPaq, online.



I finally managed to buy the digital camera I wanted at a huge electronics market in Saudi Arabia

Steven D'Souza

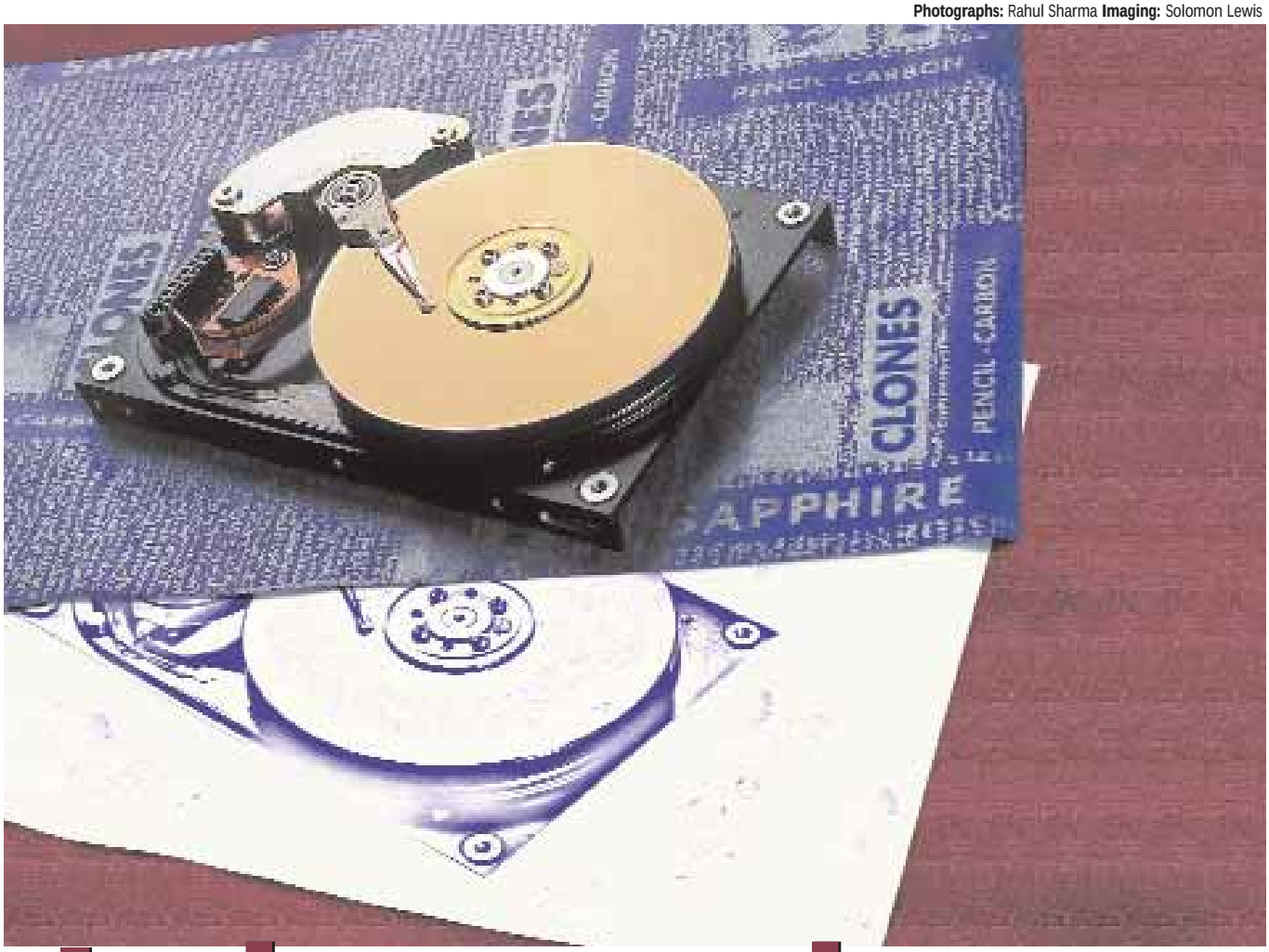
Technology Enthusiast

As new brands and models enter the Indian market, life will become easier and competition will also help drive prices down. Either way, its obvious that things are beginning to get very interesting for all of us gadget freaks! So the next time you go shopping for a gadget, shop wisely. And there just might be times when lady luck smiles down upon you, as she did on Kersi Aga, co-founder of the Indian Palm User Group (IPUG), who was introduced to the Palm when his father picked up one from a shop. "As he was not using it much, I proceeded to fiddle around and got hooked on to it!"

Now if only we were all so lucky!

1/2 page H. AD

**Photographs:** Rahul Sharma **Imaging:** Solomon Lewis




# In its own image

Is the fear of system crashes getting to you? Well don't give it a second thought… just clone your system settings

MANU KHANNA

Image is everything. What would the British be without the stiff upper lip, the Japanese without the perfectionist attitude and the Americans without Marilyn Monroe? But hey, nobody is perfect. We all have experienced the occasional flaw in our defences. What follows thereafter is the long process of rebuilding from scratch. But if you have the right image, then this process of rebuilding is not too difficult.

Now hold on a minute—we still are your favourite technology magazine and we are not about to take you through a psychology test for your self-esteem. What we are talking about is an image of your hard disk, and not your own! It's the one thing that will come to your rescue if you face a system crash.

### What causes this?

Over time, all the shareware, demos, trial versions and other goodies that you may have installed courtesy the Internet, results in a clutter building up on your hard drive in the form of .dll, .txt and other assorted files. To add to the mess, even programs that you may have removed using the uninstall feature, leave behind files that are of no use to you. All versions of Windows, right from 3.1 to Windows 2000 have been without a good enough uninstall program. Eventually 'the blue screen of death' starts popping up on your monitor like a screensaver, indicating that Windows is misbehaving and needs to be disciplined.

Having to go through the rigorous procedure of formatting your hard drive, reinstalling all the software you've lost and reconfiguring your PC settings as per your preferences can be a tiresome process. But hey, this doesn't mean that you give up all those shareware and freeware to combat frequent system crashes or slowdowns. It's always a good idea to clone your system settings, your operating system, frequently used

## The Linux Way

Here's how you would create an image of a hard disk, or of any storage device for that matter, in Linux.

**Step 1:** The command

dd if=/dev/hda of=harddisk.img

copies the entire hard disk to a file called harddisk.img. You can similarly make an image of any device, including CDs, floppies or whatever you choose. Once you're through making the image, you can mount it through a loopback device, allowing you to edit the image file.

**Step 2:** Use the command line

mount -t ext2 -o loop harddisk.img /mnt/loop

to mount the image.

After you mount it, you can remove all the files you don't really need restored, and thereby save space in your image file.

The best part though, is that you do not need third-party software to make a drive image in Linux—the feature comes inbuilt.

programs, etc. You can then easily restore your system to its original condition.

### Cloned applications to the rescue

PowerQuest's DriveImage Pro (PQDI Pro) is one of the many software that allows you to create a disk image (read clone) of a Windows partition and store it onto a different partition on the same hard drive. You can take a drive image of the partition once you've installed Windows, device drivers and Office applications, configured your e-mail, networking and Internet settings, and tweaked your machine. This process copies all the contents of the partition, including the boot settings, configuration and system files into a single file that can be compressed to 50 per cent of the actual size. This compression takes place simultaneously while the image is being created.

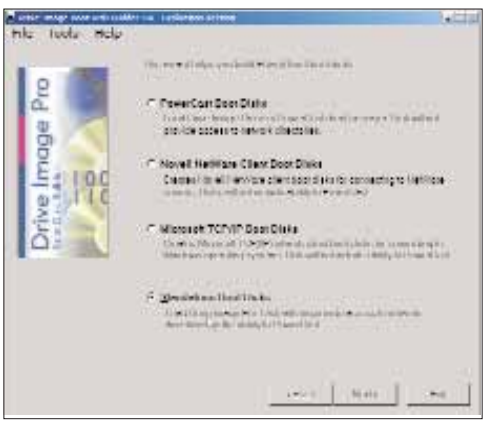
Before you start off with cloning your system, you need to ensure that you have completed installing and configuring your machine right from scratch. Once you have this out of the way, install PQDI's Drive Image Pro onto your hard drive. Just follow the on-screen prompts and keep pressing Next. You will also need a formatted 1.44 MB floppy disk—preferably more than one, just to be safe.

### Creating an image

PQDI works best if run through MS-DOS mode and that too via a floppy disk as this allows it full access to the partition that you want to clone.

**Step 1:** From the PQDI Program group in the Windows Start Menu, choose the Boot Disk Builder option. You can either use a standard Win95/98/2000/Me boot disk or use PQDI to make one. It is recommended that you use PQDI to make the disk as it takes care of the entire process. If you were to use a standard boot disk, you would have to do it manually, that is, you would have to type your way to the folder where you installed PQDI and then finally execute PQDI.

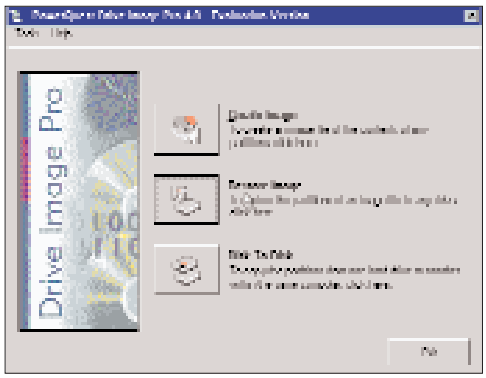
**Step 2:** Under Boot Disk Builder, select the Standalone Boot Disks option, click Next and follow the on-screen messages to complete the process.



Creating a boot disk using PQDI

The resultant floppy disk contains the files that PQDI would need to make a drive image. Store this disk in a safe place, as this will be required when you decide to restore the image.

**Step 3:** Insert the disk in your floppy drive and restart your PC. The floppy disk will automatically start PQDI. Here, click on 'Create Image' and hit Next.



Creating an image using PQDI

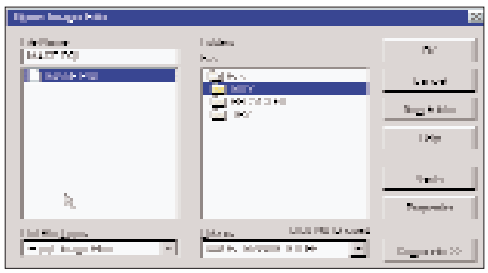
**Step 4:** Specify the drive/partition that you want to clone. You can also specify a password for the image file so that no one else can use that image. Click OK and then click Next to continue.



Specifying the drive to be cloned

**Step 5:** Specify the name and a path where you want to save the image and continue.

**Step 6:** Set the compression level to Low, High or No, depending upon the amount of free space you have. Bear in mind that an image made using 'High' compression will take the longest to restore. This is because during restoration, PQDI will first have to uncompress and then restore. In our case we chose High.


Setting the compression level

**Step 7:** Finally, press Next twice and PQDI will start creating and saving the image to the location you specified in Step 6.

Once the process is over, you will get a message confirming successful completion of the process

## Save up on Space

You can reduce the size of the image by as much as 30-45 MB, even after compressing the image.

**Delete these with eyes closed**

**Help Files:** The Windows/Help directory is full of information that you never read, especially if you don't use the help files. Retain certain files, such as Office help files, but delete all others, including some .avi files that are installed as part of the default setup. You could also do away with the .cnt files and .gid files which are used as part of the Help, Find and Search mechanisms.

**The Browser Cache:** Set to a minimum of about 1 per cent of the hard disk.

**The Windows/Media directory:** Delete all or selectively, it's up to you.

**Fonts, cursors and wallpapers:** How many do you actually use?

**Office templates:** A serious waste of space, though some may be useful. You can always reinstall these.

**Information files:** .txt files can be found all over your hard drive. These include some useful pieces of information, especially the tips.txt file in the Windows folder. But once you've read them, you could either delete or archive them. This would also apply to the readme.txt or readme.1st files, which seem to be scattered all over the place.

**Pay attention to these**

**Windows Executable files:** There are a lot of .exe files in the Windows directory that you never use. So figure out what they do and delete the ones that you wouldn't need. Once again, you'll find these on the installation CD.

**WindowsInf directory:** This isn't for the faint hearted, but if you know what you're doing, you will find a lot of wasted space in this directory. Use Quick-View or Notepad to view these files.

### Restoring the image

Restoring the image, when required, is a very simple task.

**Step 1:** Start your PC with the PQDI boot-disk inserted in the floppy drive. The floppy disk will take you to the PQDI wizard screen. Here click on 'Restore Image' and press Next to display the 'Open Image File' window.

**Step 2:** Browse to the folder where you saved the image and click OK. If you had specified a password for the image file, you will be asked to enter it here and press OK.

**Step 3:** Press Next then OK to display the 'Ready to restore image file' window. You can click on the Advanced option button to instruct PQDI to check for errors and viruses before restoring the image. The time taken to complete the restoration process will depend on the size of the image and the speed of your computer. When the process is completed, a confirmation dialog box will appear on the screen; click on Yes to exit to MS-DOS.

**Step 4:** Take out the floppy and restart your PC. You'll find the PC sans all the errors that forced you to restore the image in the first place.

### A clean slate

So with all that said, you need not live your life in fear of a crash anymore. And when your PC does crash, you can sit back and dream about cellophane flowers in yellow and green, towering over your head. We didn't say this: John Lennon did!

1/2 page
V. AD

# It's PLAy time

Starved for activity on a rainy afternoon? Learn to party with your PDA

Find it on digit interactive

**Software**
Microsoft Reader, Adobe eBook Reader
**Newsletters** on Handhelds check out
**Mindware**

ANIL PATRICK R.

Feel like a movie or maybe a round of *Quake*? Or perhaps you just feel like relaxing on a quiet evening, with music playing in the background. Then what are you waiting for? Your dream partner, the PDA can do this with ease. So give it a break from all those e-books and word files and party it out with your PDA.

### Music, video and games?

Yes, most of the PDAs available (Pocket PCs and Palms) can playback MP3 and video. Pocket PCs have an edge over Palms at present due to their higher memory and audio-video capabilities.

The hardware and display capabilities of most Palm PDAs are usually low, which retards its multimedia capabilities. After all, who would want to watch videos in shades of grey? This limitation of Palm PDAs had given Pocket PCs an unfair advantage when it came to music and video playback. But the balance is shifting with the introduction of high-end Palm powered PDAs such as the Sony Clie series and the Palm m505.



**Photograph:** Rahul Sharma, **Imaging:** Solomon Lewis

However, it's a different story with playing games as most of the popular games are available in Pocket PC and Palm versions. Now let's see how we can make a PDA sing and dance!

### Let it rock

Grooving with the Pocket PC is easier than you'd have thought. Simply copy the MP3 file into your handheld using ActiveSync, which will also convert the MP3 file into a form that the Pocket PC can use. A tap on the file in your Pocket PC is all it takes to play the file in Windows Media Player.

If you are one of the lucky ones with a Sony Clie, music playback should not be a problem for you. Another Palm model with very good audio output is the Handera 330, which comes with an inbuilt microphone, 240x320 QVGA screen, and amplified speakers.

Sorry to disappoint you if you have one of the older Palm models as most of them cannot play MP3s. They need hardware add-ons for multimedia capability to be included. However, the cost of these add-ons is usually comparable and sometimes even less than that of a standard Pocket PC.

### Going to the movies

Most Pocket PCs come with Windows Media Player as standard, which allows playback of MP3s only. For playing video files you need Windows Media Player 7.1.

Copy a media file (in .wmv format) into the Pocket PC using ActiveSync. In case you do not have files in the required format, you can use Windows Media Encoder 7.1 to convert them to Pocket PC supported formats. Windows Media Encoder can convert files with .wav, .wma, .wmv, .asf, .avi, .mpg, .mp3, and .bmp extensions. It is available as a free download from the Microsoft site (http://www.microsoft.com/windows/windowsmedia/en/download/default.asp?pcode=2#location2). Make sure that you select the Player for the Pocket PC before downloading it.

Transferring the file to your Pocket PC may take a little time if you are not using a USB port. After the transfer is over, play the file by clicking on it. Sometimes it may not play if there is no file association. In this case, open the file from the media player.

If playback is still a problem, go to **Tools >**

## Clie Power

At last, a Palm reply to the Pocket PC! The Sony Clie PDA series features all that the Pocket PC had on offer—colour screens, built-in MP3 player, 8- and 16-bit colour capability, resolutions of 160x160 and 320x320…

First in the range is the PEG-N710C. It features a built-in MP3 player with headphones, Palm OS 3.5, resolution of 320x320 and 8-bit colour. It comes with an 8 MB Memory Stick as standard, which lets you store tracks. You can add a larger Memory Stick of 8, 16, 32, 64 or 128 MB.

The other models in the range do not have MP3 playback, but come with high graphic capabilities. The PEG-N610C/S or the PEG-N610C/V is powered by the latest Palm OS 4.0 and has 320x320 resolution along with 16-bit colour.



Sony Clie N710C: MP3 on your Palm



Copying a media file to a Pocket PC to play video

**Settings > Audio & Video** in the Windows Media Player 7.1. Select Yes from the Audio and the Video drop-down menus. A message pops up, warning of delays and device instability. Click OK; this ought to set the problem right. There you are! Your Pocket PC is now fully equipped to play all your movies and music videos.

You can also play video clips on a Palm. Some of the video player software available for the Palm are gMovie Player, FireViewer, TealMovie, etc. Let's take a look at how to use gMovie Player for playing video clips.

First of all, download gMovie Player 2.0 from www.genericmedia.com. Unzip the file and install using Palm Desktop. Use the HotSync manager to add gMovie Player to the HotSync list. Synchronising between your Palm and PC will install gMovie Player.



Video clips on the Palm

You will need to install gMovie Maker 2.0 (available from the site) on your PC to convert QuickTime, AVI, and MPEG-1 files to the gMovie format for playback on the gMovie Player.

To convert video files into the gMovie format, using gMovie Maker, make sure that you have QuickTime 5, with the QuickTime authoring component.

To convert the media clips, click on the Add File button on the gMovie Maker interface to add the file to be converted. Now use the Convert button to start conversion of the file. It will be saved as a .pdb file in the source directory unless you specify otherwise.

Copy the .pdb file into the Palm using the Palm Desktop. By tapping on the file you can watch the video clip using gMovie Player.



Using gMovie Maker to convert media clips

### Are you game?

Installing games on the Pocket PC is very simple. First check your device's specifications to see whether you have the correct processor type for your Pocket PC. Once you have figured out which file is perfect, just download it into your PC.

Many games come with set up programs that can be installed straight from your PC's desktop. Some have self-extractor files. Clicking on the file will extract the file into your PC. Make sure that ActiveSync is on and that your Pocket PC is connected, since some files self-extract and install themselves directly. In other cases, the file will be extracted into some folder on your PC. If it is a .exe or .com file, simply copy it into your device and run it from there.

Some games come in compressed formats such as .zip and .rar. Use utilities such as WinZip and WinRar to extract these files. Most of the files will have Read Me files in which the directions for installing will be given. In case only an exe file or com file is there, then just copy it into the Pocket PC and run it from there.

Games are also available as .cab files. Get hold of the file appropriate for your PDA's processor and copy it into the device. Now use File Explorer in your Pocket PC to go to the folder where the file has been placed. Tap on the file to get it running.

Installing games on the Palm is really easy. Most of the game files that are downloaded have the .prc extension. Some of the games may also have .pdb extensions. To install these files on to your Palm from the PC, start the Palm Desktop. Click on Install, browse for the file you want to install and then click on the Add button. The next time you do a HotSync, all these files will be installed automatically. You can now start the game by simply tapping on it.

So what are you waiting for? Get down to where the action is.

## Installing Windows Media Player 7.1

Download the wmnall.exe setup file into your PC. Make sure that ActiveSync is running and that your Pocket PC is connected to the PC. Before starting the installation, make sure that the Pocket PC does not have any previous versions of Windows Media Player installed in your machine. If you have an older version, make sure that it is uninstalled before continuing with the installation.

Double-click on the wmnall.exe file to start the installation process.

Click on the Yes button to continue with the installation.

# Troubleshooting

Find it on digit interactive
**Troubleshooting**
All about partitioning, check out **Mindware**

Facing hardware issues, wondering how to convert FAT16 to FAT32 in Windows Me, having battery troubles? We have solutions to these and other problems

*Applications*

## Not so compact at Access

I have been using an Access database to keep patients' records and other information for over two years. I recently started compacting the file about once a week as it had grown to about 9 MB. Once, after clicking on Compact and Repair, the file closed down, showed 'Compacting....' in the task bar and then instead of opening again, an error message popped up saying, 'AOIndex is not an index in this table'. On clicking OK, nothing further happened. Thereafter, whenever I try to open that file, the same error message pops up.

On clicking OK, it pops up again and on clicking OK again, nothing more happens. I have been using a third-party backup software and I had backed up all my files. So I tried to open the backed-up database. But even this didn't open and showed an identical error message.

I opened a blank database and tried the Import Table feature to try and recover whatever tables, forms, queries that I could, but the same error message popped up again. Can you suggest how I could recover the data tables and the painstakingly created forms?

**Ravi,**
Via e-mail

Rx There are many reasons why the database file could have got corrupted, ranging from hard disk error to power failures during a write operation. The Compact and Repair utility does help in recovering damaged files. The Compact utility eliminates empty space that may exist in a database.

The Repair utility will try and repair the existing tables, queries and indexes that are present in the database, and will not touch forms, macros, reports, etc. Try the repair utility in the following manner and see whether it works.

Create a backup first of the database, and delete the .ldb file if it is present (the .ldb file is used to determine the records that are locked in a shared database). Close the database, and go to Tools > Database Utilities and then click Compact and Repair Database. If you get an error message, and you are also not able to import the fields to a new database, try exporting the table to an ASCII (delimited) file. Delete any relationships associated with the table and then delete the table from the database. Then try compacting the database again and recreating the relationships.

Open the ASCII file in a text editor and check out for any junk characters or strange data and remove these data. Save the file again as an ASCII text. Re-import the text back to a newly created Access table. This should solve the problem.



Use the Compact and Repair option to rectify corupt tables

*Linux*

## Really Linux

I installed DragonLinux on my computer but am unable to run it as it says "CPU is in V86 Mode. You need pure 386/486 real mode or VCPI server to boot Linux". I use Windows Me. Please advice.

**Vijay,**
Via e-mail

Rx While running Windows Me, it is not possible to use real-mode DOS applications, hence, it disallows your Linux Loader to load up the kernel in the memory space. Installing Win 98 will obviously solve this problem, but the easiest solution would be to create a boot floppy with the old Windows 98 boot data and the Linux loader.

You should create a batch file on the floppy that loads up your Linux kernel by using the standard commands.

Alternatively, you could add these commands to autoexec.bat making it almost automatic.

*Windows*

## Please Stand By

I use Windows 98 SE with IE 5.5. Recently, I wasn't able to see the Standby option in the Shut Down dialog box. The problem occurred after my computer crashed once and I had to press the reset button. How do I get back this option?

**Soumitra Ghosh,**
Via e-mail

Rx The problem is most likely due to power management issues after the computer crashed. To solve this, go to the Control Panel (Start > Settings > Control Panel) and double-click on the System option. Select the Device Manager tab, and click the + symbol next to System Devices.

If you see the Advanced Power Management item here, remove it from the list. After this restart the computer and then go to Control Panel > Add New Hardware and select Advanced Power Management (or wait for



Configuring power management

it to be automatically detected). Now, you should have your Standby option back.

*Windows*

## Missing files

Whenever I start my computer I get an error message that a file dfs.vxd needed to run Windows or Windows applications is missing. To which application does this missing file belong and how do I get it back?

**Aniket Gomase,**
Via e-mail

℞ The missing file is part of your Windows operating system, and the error you get normally occurs when you change the Network logon method (say from Windows Family logon to Client for Microsoft Networks). You can extract the file by running sfc from Start > Run in Windows 98 SE. The file is located in net9.cab file of your Windows 98 installation.

Alternatively, if there is no need for this file, you can search the registry for instances of this file and delete the registry key. Remember to back up your registry before you make any changes to it. To edit the registry, go to Start > Run and type regedit.

In the menu that comes, find (Edit > Find) the string dfs.vxd and delete the entries that come up.

*Applications*

## Not dat movie

I have a problem in playing the *.dat files. I tried all software like Windows Media Player, Jet Audio, VCD Cutter and others. But the problem is that I hear sound but see no picture. I am unable to see any of the movies. I can play all other file formats like *.avi with no trouble at all. I tried reinstalling Windows too and running virus scans. Please help.

**Abhijeet Bhandwale,**
Via e-mail

℞ Reinstall your Windows Media player or alternatively download the Xing Mpeg player and try running that. This should solve the problem.

*Windows*

## Studio crash

While working in Windows Explorer, I get the following error: "Explorer found an error in PDM.DLL. If you face more problems try restarting your computer." What is the cause of the problem?

**Manish Sharma,**
Via e-mail

℞ This problem can occur if you are running Microsoft Visual Studio version 6.0. Pdm.dll is a Process Debug Manager file, and gets installed with applications such as Visual Studio (Visual Basic or Visual C++).

To solve this problem, you need to have the Service Pack 3 of Visual Studio installed. You will locate this at the Microsoft site. Alternatively, you can simply try renaming the Pdm.dll file from the Windows > System folder.

*Windows*

## Direct Touch

I have two computers, one is a Pentium-200 and the other is a P-III 700. I was told that the two computers can be attached through a null-modem cable. Accordingly, I have done so using a 9-pin cable.

When I run the direct cable connection from Accessories they both get connected, after which the guest computer asks for the name of the host computer. When the name is keyed in, a message that no such computer is found on the network, flashes. But from the Start Menu, through the Find Computers option, if I key in the name of the computer, it displays the computer's icon.

This, the other computer is unable to find. Even after reversing the roles of the computers the problem exists. Also, the computer's icon is not displayed in Network Neighborhood. Please advice me.

**Mukund,**
Via e-mail

℞ For Direct Cable Connection (DCC) to work properly, you need to do the following:

1. Install DCC on both the computers through Control Panel > Add/Remove Programs > Windows Setup tab, and select the Communications option, click on Details and select DCC.

2. Install Client for Microsoft Networks and enable File and Print Sharing through the Network Neighborhood icon on the desktop. Right-click on the Network

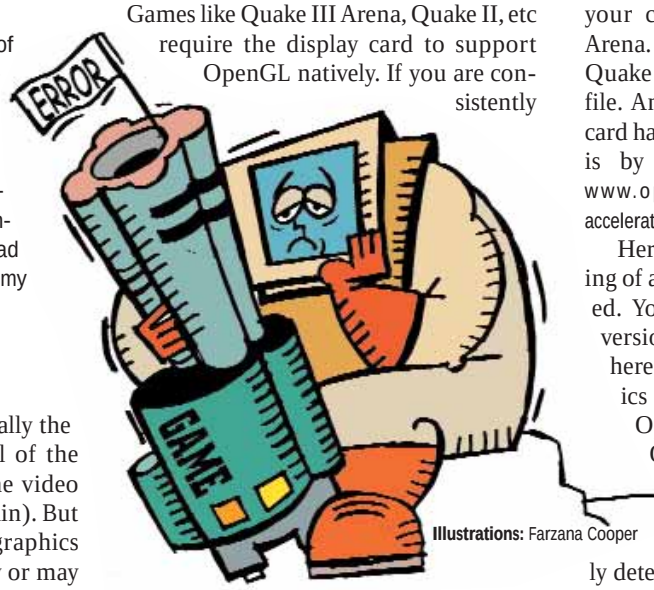
*Hardware*

## Games people play

I have a P-III system with 128 MB of RAM and 8 MB shared video memory. It also contains onboard 64-bit 3D Graphics Accelerator. I installed OpenGL and tried running Quake III Arena, but received a message saying, "Missing Glide Installation-Assuming no 3D fx. Could not load Open_GL subsystem." Please solve my problem.

**Kevin,**
Via e-mail

℞ When this error occurs, usually the option is to do a clean reinstall of the video drivers (that is remove the video drivers and then install them again). But as you are using an onboard graphics accelerator (not specified) it may or may not have native support for OpenGL. Games like Quake III Arena, Quake II, etc require the display card to support OpenGL natively. If you are consistently getting this error then crosscheck whether your card is supported by Quake III Arena. All the cards that are supported by Quake III are mentioned in its Readme file. Another way to find whether your card has some OpenGL capabilities or not is by going to the following link: www.opengl.org/users/apps_hardware/accelerators.html.




**Illustrations:** Farzana Cooper

Here, you'll find a comprehensive listing of all graphics cards that are supported. You can also download the latest version of the OpenGL drivers from here. GLSetup detects your 3D graphics card and installs the matching OpenGL drivers. Games supporting OpenGL will include GLSetup to ensure your system has drivers available to accelerate OpenGL 3D rendering.should successfully detect and rid your PC of the virus.

Neighborhood icon and select Properties. Click on Add, select Client and add Client for Microsoft Networks. From the File and Print Sharing option, enable it.

3. For DCC, you can work with the NetBEUI or IPX/SPX protocol. Just install one of these protocols from the Network properties (Add Protocol). If you are adding TCP/IP you will need to assign an IP address. Add the Dial-up Adaptor also from the Add Adaptor option.



You have to be a host or guest for DCC

4. Connect the null-modem cable to the COM ports.

5. Share a directory or folder on the computer. Start DCC from Start > Programs > Accessories > Direct Cable Connection. You have the option of connecting as a host or a client. The problem could lie here because the client can see all the shared folders on the host, but the reverse is not possible.

If you get the verifying username and password option, it means there is no problem with the ports or the cable. Also, ensure that when you log on Windows during startup you haven't hit the Cancel button.

*Hardware*

## Display on DOS

I have an Intel Pentium II 400 MHz PC with 256 MB SDRAM. Recently, I installed a SiS 6326 display adapter card. It works fine with Windows GUI environment but while booting or working in DOS, it generates dots at random positions in the display. Sometimes some letters of the alphabet even start blinking. What could be the problem?

**K Thiyagarajan,**
Via e-mail

℞ This problem could be related to the memory on your newly installed graphics card.

Try or borrow a spare display card to test whether this behaviour recurs. If it does, it could be a problem with the AGP bus, in which case you will have to try testing with a different motherboard.

*Hardware*

## Power effects

I have an assembled P-III 800 on Mercury 815e motherboard and a 28.5 Seagate B with 128 MB RAM. My problem is that whenever I switch on the system the power lamp and HDD activity indicator glow continuously, but the system doesn't boot. If I leave it like that, sometimes it boots after a few minutes, and this could take anywhere from less than a minute to 10 minutes. Please shed some light.

**Gurpreet,**
Via e-mail

℞ There are two distinct possibilities here. This could be a problem with your power supply wherein it is not supplying clean power to the motherboard to get it running.

Try changing your power supply or borrow one from your vendor and test it out. Alternately, you can try reversing the jumper on your motherboard for the ATX power switch. This could solve the problem. Remember to discharge yourself of all static electricity before you open up your PC. You can do this by touching the non-powder coated parts of your metal cabinet with your bare hands.

*Hardware*

## Battery issues

My system's CMOS battery becomes weak repeatedly and I am losing the system time and date. Earlier, I had no problems with my system battery. But then I upgraded the PC with another motherboard (Tomato with AMD K-6 processor) and within two to three months the system battery started failing. I have changed it twice but it's of no use. Please help me out.

**Rohit,**
Via e-mail

℞ Most likely, you may have received a faulty battery with your new motherboard. Besides, CMOS batteries have a problem with the relatively high humidity present during the rains. These batteries generally last for two to three years, although some (especially the lithium type) have been known to last much longer. Ironically, the less you use your computer, the faster the CMOS battery will run out. This is because when your computer is turned off the battery begins to function. So, for starters try keeping your computer in a non-humid environment, and if that doesn't work, it's likely that you have a defective motherboard and you will have to replace it.



*Applications*

## Multiple burns

I received Nero Burn 5.0 CD with my CD-writer, and as I have three CD-writers (Plextor). I downloaded Nero 5.5 from the Net so that I can write using multi-recording facility, i.e. be able to write on three writers at the same time with same source. But I am unable to do so. I have tried to select two writers in Nero 5.5, but have been unsuccessful. What should I do to use multi-recorder writers?

**Aniruddha Dikhit,**
Via e-mail

℞ Nero 5.5 per se doesn't allow you to burn more than one CD-writer at the same time. But the special edition of the software (for which you have to pay) allows you to simultaneously record to 32 CD-writers. Another software you can work with is Easy CD Creator Platinum edition.

Alternatively, if you have your CD-writers installed on separate IDE controllers then you could try running two separate CD-writing software. Of course, your PC

will have to match up with such a load if you try this alternative.

*Internet and Communications*

## Fonts for Hindi

I am working on a site for which I have to make use of Hindi. How do I make sure that visitors to the site don't have to download the fonts?

**Amarjeet Singh,**
Via e-mail

Rx Using font-embedding technologies, it is possible to embed fonts inside a Web page such that visitors will see it the way you have designed it and not the default font style. Font embedding technologies differ for Internet Explorer and Netscape, and involves conversion of your True Type or Post Script font to Embedded open type



WEFT works well for font embedding

(.eot) or Truedoc (.pfr) file formats. Microsoft supports the former while the latter is supported by Netscape. However, not all fonts can be embedded and only those specified by the creators can be embedded. Microsoft's free WEFT tool is a good utility to embed fonts in your site.

*Windows*

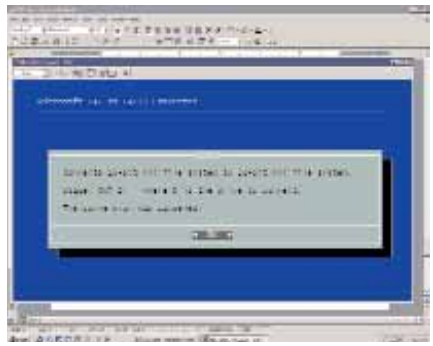
## Converting FAT16 to FAT32

I need to convert FAT16 to FAT32 in Windows Me. How do I do it?

**Nikhil Bhatia**
Via e-mail

Rx To convert a FAT16 partition to FAT32, you must follow these steps:

Create a Windows Me Startup disk and restart your computer in command prompt with the Windows Me Startup disk in the floppy disk drive, without CD-ROM



Converting to FAT32

support. At the command prompt, type cvt c: assuming c: is the drive that you want to convert to the FAT32 file system.

If Windows is not installed in the default folder and you receive a bad command or file name error message, type c:\windows_folder\command\cvt.exe c: at a command prompt.

Here 'c:' is the drive in which Windows is installed, windows_folder is the Windows folder, and 'c:' is the drive that you want to convert.

Press [Enter] so that ScanDisk can check the drive for errors before the file system is converted. After this, the amount of free space that you gained by converting to FAT32 is displayed. Remove the Startup disk and press [Enter] when prompted to restart your computer. Note that the File system reportedly does not convert correctly if you have both the FAT16 and FAT32 file systems on your drive.

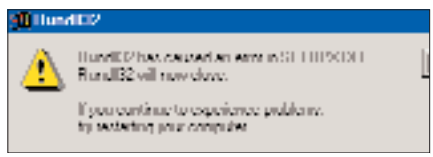
*Windows*

## Setup blues

I am using Windows Me, and face the following problem. When I click the tab of Windows Setup in the Add/Remove option in Control Panel, I get a dialog box with the error saying 'Rundll32.exe has caused an error in Setupx.dll…" How do I rectify this problem.

**Dibyendra,**
Via e-mail

Rx Most likely, the Setupx.dll and/or the Setupx32.dll file in your system directories



Don't let such errors happen to you

have got corrupted. You will have to reinstall the files first. To do that go to Start > Program>Accessories> System Tools > System Information and click on the Tools tab and select System Configuration Utility. Click on the Extract file option and give the names of the two files, Setupx.dll and Setupx32.dll and specify the directory where your Windows installation files are present.

In case you get an error saying not being able to extract file because files are in use, then you will have to use a boot disk to boot into DOS and use the extract command to extract the files.

If replacing the files doesn't work, as a last resort, try using the same files present on Windows 98 SE instead of your Windows Me files.

*Linux*

## Cylinder issues

When I was installing Red Hat Linux 7.1 from the CD at the time of partition on my 20 GB hard disk, I got an error message that said that the Boot Partition is more than 1024 cylinders. It stops after the error and restarts the installation. What is the problem and how do you solve it.?

**Jagdish Patel,**
Via e-mail

Rx While you are partitioning your hard disk you have to remember certain limitations that are present in LiLO (the Linux boot loader). LiLO, before version 21-2 and earlier, did not allow you to load the kernel if it is located beyond the 1023 cylinder head of the hard disk drive (roughly above 8 GB). This version of LiLO is what was found in the earlier versions of Red Hat such as 6.2.

However, the recent versions of LiLO, version 21-3 and above have fixed the problem, and can even boot kernels located around the 2 terrabytes range. So, in your case, Red Hat 7.1, that boots with the LiLO 21-4 shouldn't be a problem.

However, this problem still occurs if you have an older motherboard due to the limitations of the BIOS. Therefore, the alternative for you is to change your motherboard, which is an expensive proposition.

A simpler method or more cost-effective is to see to it that the Linux partition or kernel is not located beyond the 8 GB range. This you can do by having the Linux partition as the second primary partition (around the 4 GB range).

**DO YOU NEED HELP?**

Send an SOS to sos@jasubhai.com
Or write in to DIGIT, D-222/2, Om Sagar Bldg, MIDC, Nerul-400 706

# tips & tricks

# GET DIGITISED

Move over traditional forms of music and photography. The digital cameras and portable MP3 players are here to rock you



Find it on digit interactive

**Tips & Tricks**
Compilation of tips
Mindware

**Imaging:** Solomon Lewis

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# THE DIGITAL CAMERA FOR YOU

You can stop thinking of digital cameras as a luxury item. You can easily use a digital camera instead of the conventional camera and come up with some good prints

## Buying it Right

Looking out for the best digital camera for your needs? Check out a few pointers before you settle on one

### Check out the ergonomics

While choosing a digital camera, don't just go by the features. Also, look for the ergonomics of the camera. That means, while taking the snap see that the button



The Canon digital camera

placement is within the reach of your fingers and your fingers don't come in the way of the lens or flash. If you are wearing spectacles, then check out for digital cameras that provide you with a focusable diopter in the optical viewfinder. This will ensure that the focal length is automatically adjusted for you.

### Selecting the right resolution

It's advisable that you select a digital camera keeping in mind the output medium that you will be typically using it for. For instance, if the snaps from your digital camera will mainly be for the Web, then a camera with a 640x480 resolution will do. For smaller-size printouts, you will need one that supports at least 1024x768 and for bigger size photographs you will need 1600x1200 at the minimum.

### Resolving the pixels

While purchasing a digital camera, always go by the resolution and not the CCD count since the CCD count (2.1 megapixels or 3.3 megapixels) is more likely a marketing gimmick and reflects a higher pixel count than the resolution. For instance, a camera with a resolution of 1600x1200 will have a total pixel count of 192,000, whereas if it is slated to have 2.1 megapixels, then the total should be 210,000 pixels.

### Zooming into optics

One of the most important features of the digital camera is its lens. Most digital cameras come with a zoom lens with specifications such as optical zoom and digital zoom, of which optical zoom is more important.

Optical zoom means the actual change in the focal length. The optical zoom works by using a system of lenses to refract light and magnify an image on to the CCD.

This means that the quality of image you get is magnified along with the resulting detail and clarity, unlike a digital zoom that magnifies or crops the image and is more of a software function, but the quality of the image suffers and can appear fuzzy. The digital zoom is similar to the interpolation in a scanner.

You could use this optical zoom feature if you intend to take photographs at high resolution and are going to view it on the screen or print it on a photo printer (regular colour printers are not optimised for image printouts and give pixelated images).

In digital cameras, the zoom can be either kept on auto, where the camera decides the focal length depending on the metering you have selected, or on manual mode using which you can change the focal length manually. Here metering, which refers to the different ways in which the camera detects light conditioning, is very important because if you keep the metering as matrix, the lens will zoom into the most prominent part in the image.

But if the same image is shot using spot metering then the lens will zoom in or out according to the spot and the image will look completely different.

Normally, the cameras will have two numbers marked on them that will tell you the optical zoom and digital zoom available. Normally, a camera will have 3x optical zoom and 4x digital zoom.

### Costing for the extras

When you are purchasing a digital camera, don't just look at the cost of the camera but also account for hidden or running costs such as costs of batteries (rechargeable batteries are in that sense preferable), cost for adding more memory at a later stage and other smaller variables like power adapters and the case for the camera.



Casio with its digital camera range

### Getting the interface right

We all know that USB will be faster than a serial interface. But you should check out for a USB digital camera not just because of speed.

Apart from the hot plug-in capability, USB also simplifies the ease of use of transfers since the computer thinks of the USB device as another drive. So, you

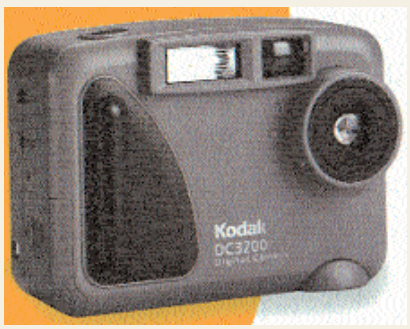
Ad will come

can easily drag and drop files using the Windows Explorer.

### Shuttering with speed

The faster the shutter speed, the crisper the picture. Shutter speed is nothing but the time for which the shutter will stay open to allow light to pass and hit the CCD. The shutter speed is denoted in fractions, so the higher the denominator number, the faster the shutter speed. The shutter speed is directly proportional to the depth of field, the subject and the area behind.

The faster the shutter speed, the lesser the depth of field and, hence, most amateur photographers use slow shutter speed to get the best depth of field. Besides, faster shutter speed also demands lots of hand stability because if your hand moves even a little bit, the image will be blurry. Therefore, it is better to first test how fast the camera shoots. If it takes more than six seconds before you can shoot again, then the camera is probably not worth your time.




The conventional Kodak with a digi-cam

### Storing the images

If you are conscious about the image quality, then save your files in either a .bmp or .tif format. These formats do not compress the image or lose detail. Of course, a whole lot also depends on the storage space your device has. For instance, an image at 1600x1200 pixels in an uncompressed format can easily take up 2-3 MB and with an 8 MB storage, you will only get four images before you have to transfer it to the computer. So, make the right choice between your compression and storage.

## Enhancing Quality

Here are a few tips for better quality photographs with digital cameras

### Getting the basics right

Working with a digital camera is quite similar to working with a normal camera, and a little knowledge of photography will always hold you in good stead. A few tips on capturing a good image are worth the while.

Try and capture a moment of spontaneity instead of a dull pose. However, don't go in for complex scenes or settings; try and keep the setting as simple and natural as possible and try to avoid backgrounds with lots of action as they take away from the focus. You should try to be as close to the focussed subject as possible, as this will eliminate a whole lot of the background action and will also add a more intimate touch. Also, remember that the flash is not just for images taken in the dark or with low light. You can even use it in normal circumstances for better colour reproduction or reducing the shadows in outdoor lights.

And lastly, try to always carry your digital camera around with you. You shouldn't be wanting when the glorious moment to capture your photograph for life comes by.

### Clicking off-centre

All of us are mostly used to clicking with the main person or object in focus or in the centre of the viewfinder. This creates empty space around the focussed object, and takes a bit away from the quality of the photograph. A better method is to click with the focused object a little bit to the left or right in a manner such that it fills up the entire viewfinder.

This makes for a more visually appealing photograph. This is where the LCD screen in a digital camera comes in handy. You can easily get a real-time preview of the image on the LCD before you click the photograph.

### Focus on the neutral area

Always keep in mind while taking a snap that you don't focus on the very bright or very dark area. Instead, you will get much better results if you focus on the neutral area where the lighting condition is not extreme.

### Setting the white balance

There are basically four white balance modes that come in a digital camera. These modes are daylight, cloudy, tungsten and fluorescent. Daylight is used



Printers to digital cameras the Fuji way

mostly for outdoor photography, whereas tungsten is used for indoor photography and fluorescent is for taking images in which the target is of fluorescent colour. If you are taking a photograph of, say, some castle with the bright sky as the background, then keep the rest of the settings, such as white balance, to auto and increase the exposure by one point. In the image, the castle will retain all the detail that you would have wanted and the sky will also look a little brighter. This enhances the quality of the image.

### Using the Macro mode

While taking a close-up photograph, always turn on the Macro mode. This is the minimum range from which the camera can take photographs of the target. If Macro mode is enabled, then it is possible to take the photograph from as near as 01. metre, else it is most likely that at such close distance the image will get blurred.

Ad will come

### Flashing it right

Often the results we get using a flash aren't that great, and therefore knowing how to use the flash comes in handy. If the flash that you have in your digital camera can be detached, then a good idea would be to bounce the light on to the object in concern instead of directly focusing the flash on the object. Bouncing basically means using a reflective matter that will direct the flash light on to the object or simply tilting the flash in an angle such that it still directs the light on the object. Basically, this will ensure that the object doesn't appear too harsh with all the lights of the flash on. An aspect to remember if you use a reflective material is that the colour shouldn't be very bright or dark but should be a neutral colour such as white. Extreme colours tend to add on to the shades in the primary object being clicked.

## For the Miscellaneous Occasion

And a few other tips that just about cover everything else ranging from ergonomics to usage strategies



### Wear the neck strap

You may feel that the neck strap isn't too fancy and makes you conscious. However, it has a great benefit in the sense that by using your neck strap you ensure that you don't accidentally drop your digital camera, especially when you are on an outdoor trip.



Another range from Kodak

### Adjusting the lens

Almost all digital cameras come with an automatic adjustable zoom lens. Therefore, you can either manually adjust the lens or if you have kept it on auto, you can adjust the lens by pressing the shutter button by half while taking the snap. After that press the shutter button completely to take the picture.




And more from Kodak

One important thing to remember here is that the movement of lens in and out is governed by a motor, and by keeping it on auto would not only get the best focal length but you also save lots of battery power since this is one part of the camera which eats a lot more power than the LCD screen.

### Use the power adapter

If the camera has come with the power adapter, always use it for transferring the image from the digital camera to the PC. This is all the more true if you happen to have a camera with the RS-232 (serial) connection, which has a slow transfer rate.

### Saving on power

Always keep the power saving mode on. This makes your LCD screen consume less power. Almost all cameras have the LCD off option, which can be used to save power while taking a photograph. Also, always remove the batteries if you are not going to use the camera for long, because if the batteries leak inside the damage can be quite expensive.

### Optimising resolutions

Never keep the resolution to the maximum if you are only going to view it on the monitor, as this will unnecessarily take up more space on the camera. For such photographs, 1024x768 is the best resolution as you get good quality, without having to worry about pixelation.

However, if you are not too sure of how you are going to use the photograph, then it's better to use the highest resolution that the digital camera offers, since you can always use an image-editing tool to lower the resolution.

### Part of standard accessories

If you are planning to go on a long trip, the last thing you would want is to be away from civilisation and have your batteries run out. There goes the chance of capturing nature at its best. There are certain accessories that have to be part of your digital camera package.




And you thought Kodak made only conventional cameras!

These include batteries and chargers, especially if you are shooting with the LCD display on, which consumes a lot of

Ad will come

power. At the most, digital cameras can give you around 50 shots before you start facing power problems. So, keep spare batteries or chargers for rechargeable batteries handy. You can also invest a bit more in the memory storage you have, and this storage can range from 4 MB to 128 MB. If transferring the images to your computer is bothersome, especially with a serial interface, you can think about getting a card reader. This reader just slips into the parallel, serial or USB port of your computer. Epson, with its print imaging technology, even provides for a card reader inside a printer so that you can directly output to a printer. Also, with a card reader the battery usage is no longer an area of concern.

### Printing your pictures

One of the disadvantages most people feel is that with a digital camera you cannot take prints or that it would become too expensive. Well, it is possible to become your own developer by using photo-quality glossy paper on your colour inkjet paper, but for best results you should use a printer designed for photo-printing. There are small printers available that can give you an output of 3x5 inches or 4x6 inches and also print text. Remember, if you intend to take photo prints, you need higher resolutions in uncompressed formats. The figures below illustrates the prints you can take with the resolutions:

| | |
|---|---|
| 1024x768 | 3x5 inch prints |
| 1280x960 | 4x6 inch prints |
| 1600x1200 | 8x10 inch prints |

## MP3 ALL THE WAY

Who doesn't listen to MP3 songs or try to rip them off CDs? A collection of tips to enhance your MP3 experience

### Making MP3

Alright! You want to create your own MP3 files. Remember to keep in mind certain terms like bitrates and frequencies before you start on your quest

### Creating MP3s

It's not necessary to keep on downloading MP3s to listen to them. It's also possible for you to create MP3s sitting right at home. It's legally permissible to create MP3 backups of existing CDs that you have purchased. In order to do this, you first download software that allows you to extract audio from CDs (ripping) into Wav files. You then encode the Wav files into MP3s.



The Creative Nomad II MP3 player

Most software do the conversion to Wav in the background so you can seamlessly extract audio from CDs directly. There are a number of software such as MusicMatch Jukebox, Real, Media Jukebox that allow you to do this.

To create an MP3 file with the least glitches, it is essential that you reduce the background activity to a minimum or for that matter ensure that there is no background activity. This is because creation of MP3s is a CPU-intensive process and can take up quite a load. Ensure that you have enough memory to avoid any crashes while creating an MP3.

It's also advisable that you reboot your machine and check the free space for the Wav files and the MP3 files before you start the process.

### Selecting the right bitrate

The quality of MP3s you get is highly dependent on the bitrate that it has been encoded at. Bitrate refers to the quality of music that a media player will process per second. While higher bitrates will definitely produce better quality, it will also create bigger files.

Also, if you are planning to upload MP3s to your Web site or to a portable MP3 player, then this becomes an important consideration.

For instance, a 64 MB MP3 player will hold about 16 songs at 128 Kbps, but manage only 10 songs if it is encoded at 192 Kbps and even lesser at 256 Kbps. The table below shows the difference in quality as we increase the bitrates.

#### Bitrate-Quality Reference Sheet

| Bitrate (Kbps) | Quality |
|---|---|
| 96 | Near CD-quality |
| 128 | CD quality with optimal file size |
| 160-192 | Noticeable improved quality, around 25 per cent higher file size |
| 256-320 | Best quality and maximum bitrate that's possible though bigger file size |

Ad will come

On the other hand, if you are not too eager for very good quality, you can reduce the sampling rate to 80 Kbps. Such a sampling rate will serve the purpose for most spoken words. In fact, if it is a live recording of a speech or a radio broadcast you can even use 64 Kbps sampling rate.

### Staying away from Stereo mode

If you are encoding MP3s, then you should stay away from the Intensity Stereo Coding or Joint Stereo option. These features normally take away information that is common to both channels and encodes the MP3 in mono and thereby saves on storage space.




The Diamond Multimedia MP3 player

It's better to avoid such effects as it messes up the quality of the sound and you may face compatibility problems with some players.

### Don't reduce frequency

In our efforts to make an MP3 file smaller, we often cut many corners that are not actually worth it. One of these gimmicks is cutting off all frequencies above 10 KHz or 12 KHz.

Agreed, this may reduce the file size but what it also does is drastically reduce the quality of the sound to a level where some of the reproduction or distortion in the bass or treble become clearly audible.

### Creating MP3s from cassettes and LPs

It's not necessary that you always have to rip a CD to create an MP3. You can create the same using your ordinary tape (cassette) or the LPs that have been kept in safe custody. All you need is a soundcard on your machine with a line-in option and an adapter cable that will go into the line-in on the soundcard end and the line-out on the LP or tape end.

Then using software such as Easy CD creator, you can start the process of recording from the tape or LP. Most software will also identify the breaks between songs and therefore save the different tracks as separate files.

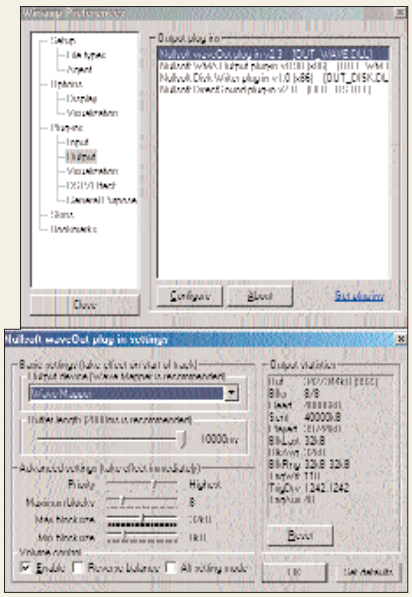
Just ensure that before you start the process, the Line-in option of your soundcard is enabled and not muted. You can check this out by double-clicking on the volume icon in the taskbar.

## Software for MP3s

There are a number of software that allow you to encode MP3s as well as play them. We look at some of the popular ones fare.

### Encoding with Winamp

Winamp is one of the more popular media players around and you can even rip and encode from audio CD tracks to MP3s. Before you do that, however, you have to check whether the CD reader plugin for Winamp is installed, whether the Nullsoft MP3 output plugin is present and that the Fraunhofer ACM Pro Codec installed. Once all these are present, select the CD tracks in the playlist and rename them manually. Then go to Preferences > Output Plug-ins, and select the option to configure Nullsoft MP3 output plugin. This basically involves selecting the directory to save the files. Ensure that you have not selected shuffle and repeat from your Winamp preferences. Now, when you click on the Play button, the process of ripping the tracks that have been selected in the playlist and



Encoding MP3s in Winamp

encoding them to MP3 starts. It gets saved in the directory you specified. If you want, you can separate the two processes and first rip the CD (this creates the Wav files) and then encode the Wav files to MP3s.

### Improving MP3 sound quality in Winamp

If you have been using the Nitrane decoder to play MP3 files in Winamp, then you may have on occasion felt that the quality isn't the best that's possible. So use the Fraunhofer decoder to play the MP3 files. It's possible to download the decoder and use it with your version of Winamp for the best sound quality.

### Enhancing speed and quality in Winamp

Tweaking a few preferences will get Winamp working faster and better. Go to the Winamp preferences using the shortcut key, [Ctrl] + [P]. Go to the Setup menu and click on File Types.

Now, click on the Select All option. In the main menu click again on Options. You will find an option for 'process priority class' with a slider bar. You should move the slider to Real-time. Other

Ad will come

options include changing the configuration from Plugins > Output. You will get the Nullsoft waveout plugin settings box. In the Buffer length options you should move the slider to the maximum, and in the Advanced Settings option, depending on your system configuration set

Priority to Time Critical

Maximum blocks = 32

Maximum block size = 64 KB

Minimum block size = 32 KB

Click OK to activate the settings.

### Using MusicMatch with portable MP3 player

It's possible to use the MusicMatch software along with your portable MP3 player. To do this, go to the Options menu and select Add New Features. Next, click the link to the portable MP3 players and then download the software for your specific player.

## Windows Media Player

This free media player, like the Internet Explorer browser, will form an integral part of the Windows operating systems. So, get used to working and tweaking it to the optimum

### Batch update your track information

Often you may want to change certain parameters such as the naming in an entire album or the category of the songs or the artistes' names. This can be done quite easily by going to the Media Library option and selecting the items that you wish to rename. Now, just right-click and select the Edit Selection option to change the items.

### Create multimedia playlists

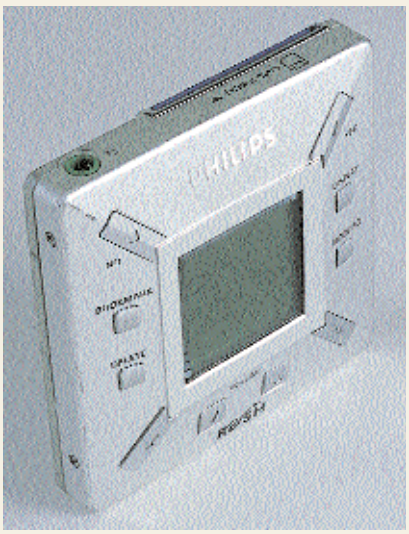
Most of us just think of playlists as containing songs. However, it's possible to add more items to a playlist such as video, music, or even radio stations. So, you can make one playlist with all your favourite Hindi songs, and then add the radio channel on the Net that plays Hindi songs. So, when the songs playlist ends, and if you are connected to the Internet, you will automatically get the next song from the radio station.

### Listening to music

Windows Media Player has a number of preset radio stations that you can use to listen to music. The presets are not just restricted to one country, but cover many including some European ones. Depending on your preferences you can change the location of the media guide. Just click on the location link and change it to the one you want.

### Accessing music from network

In an office environment often there's one computer that has all the music files on it. You can easily access this network computer or search the files within from Windows Media Player. Firstly, map the network drive where the music files are located. Then from Windows Media




Wanna rush for your Philips

Player, go to Tools > Search Computer for Media and select the drive that you have mapped.

Specify the songs, and it will now search for the title name from your computer. For saving music files, you can ensure that it automatically gets archived on the network drive. Go to Tools > CD Audio and from the Archive



Searching the Network for MP3 media

option, click on Change to point to the network drive.

### Enhancing compression while porting

When you are transferring MP3 files from your Windows media player to your portable MP3 player, you can always select to downsample your current MP3s and yet get near CD-quality. To downsample a song, go to Tools > Options and select Portable Device. From there, go to Select Quality Level and move the slider to 64 Kbps or even lower. This will enable you to store more files on your device.

### Ensuring compatibility with portable devices

You can easily check out the list of portable devices that Windows Media Player supports from the Tools > Options > Portable Devices menu. Once here, go to Currently Supported Devices and then click on Details to get the list. Copying files to your portable device is very simple. Select the songs from your playlist, click the Portable Device option, and then click on Copy music to transfer the files.

### Copying audio tracks from a video clip

If you happen to be watching a movie on your Media Player and you the like the audio track, you can easily port it to your portable player even though it is in video format. Just transfer the file and Windows Media Player ensures that the audio track gets copied to the portable device.

Ad will come

## MP3 Download Sites and Software

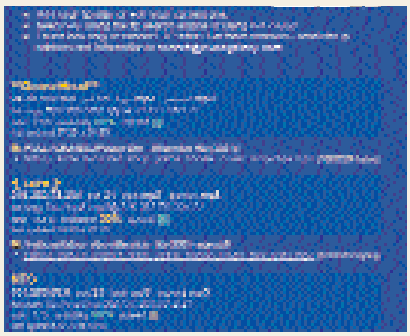
There are many sites that allow you to search for MP3s and download them. Let's take a look at how you work with Audiogalaxy Satellite and Napster

### Searching without ratio in Audiogalaxy

A good idea while searching for titles in Audiogalaxy is to use the No ratios option. This ensures that you do not have to barter files or sign-up or pay some amount in exchange for the files that you require. A problem however is that many sites change their ratio options quite often and Audiogalaxy may not be fully updated on that.

### Connecting to sites in Audiogalaxy

When connecting to a site that has one of the files you want, take care while you are



FTP sites allow you to barter music

pasting information about the site to your FTP client.

Many a times you will find that anonymous login doesn't work (the username and password might be set to 'mp3') and that the FTP port might also not be 21. If you are having problems connecting, increase the retry attempts in your FTP client and also decrease the time between retries.

### Increasing the number of concurrent downloads in Napster

If you have a high-speed Internet connection, then you can go ahead and experiment with downloading multiple files at the same time without facing any bandwidth problem (at your end at least). To do this, go to Edit > Preferences and click on the Transfers tab.

Then in the Downloads options, check out the Maximum Simultaneous Inbound Transfer option and specify a higher number there. If you are in a chivalrous mood, you can also increase the number of users who can simultaneously access your machine and download songs. Click on Save to preserve the settings.

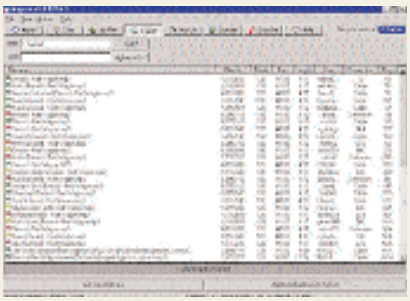
### Smarter searches with Napster

If you are looking for a specific quality of MP3s and want to download from specific speeds, it helps to narrow down your search criteria. The Advanced Search Option allows you to do precisely that.

In the bitrate option you can specify the minimum bitrate that the MP3 file should be. Select 128 Kbps normally as that's the most commonly used one and gives the best mix of file size and audio quality.

You can specify the frequency settings, but most likely all files are encoded at 44.1 KHz.

If you want to download from a high-speed line you can specify the settings in the line speed option. You can specify the minimum line speed and selecting a faster line speed such as a T1 line is better.



The Advanced Tab allows many different search options

## Portable MP3 Players

Enhance the usability of your portable MP3 player

### Conserving battery in Creative Nomad II

Just as the PC has power management functions, even the Nomad II comes with some power settings. For instance, the Nomad II has an automatic Power Off function by which it shuts itself off to conserve battery if the player is idle for more than three minutes. You can change this default setting of three minutes based on your usage pattern. To do that, go to Settings from the Main menu and scroll to Power Off and select the option. Using the Volume Up/Down or the Forward/Reverse keys, increase or decrease the time before the player will automatically shut off. Once you are done, press Play to save the settings.

You can use power management even for shutting off the Radio mode. Go to the same menu and instead select the FM Sleep option, and then using the Volume Up/Down keys (similar to the player) change the setting to whatever you desire.

### Adjusting playback speed in Nomad II MG

If you have recorded some voice in MP3, you can adjust the playback speed since the Nomad II MG uses the EAX time-scaling technology. To do this, press and hold the Repeat/EAX button. You will get to see 'Time-Scaling 1.00x' on the LCD screen. Use the Volume + or Volume – keys to increase or decrease the playback speed.

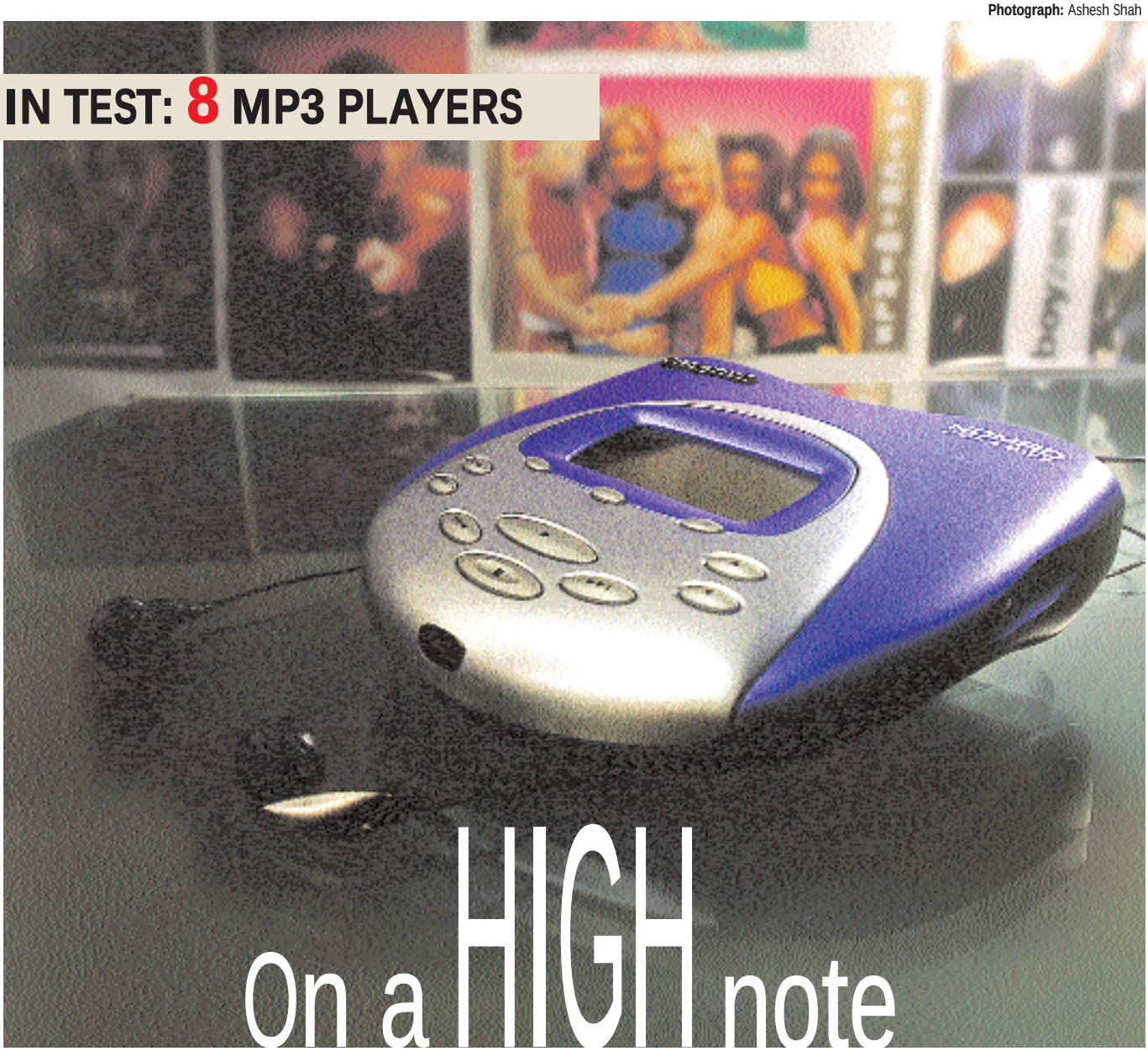
### Preserving batteries in Diamond Rio 300

Since the Diamond Rio 300 doesn't have an On/Off switch, there isn't an actual power-down, rather the player goes off to a sleep mode. Even this sleep mode uses a bit of battery power, so in case you are not going to use the player for some time, it is preferable to remove the batteries.

Ad will come

Photograph: Ashesh Shah

## IN TEST: 8 MP3 PLAYERS



# On a HIGH note

There's no stopping this tune now! No matter how many RIAAs sue Napster, MP3s and MP3 players are here to stay

VARUN SINGH

The long-playing records your dad used to listen to took more than 50 years to become popular and widely available. The magnetic audiotape you use in your car took around 40 years, and the CD-ROM took around 20 years. How much time did MP3s take to become as popular? About five to six years! Some might argue that it took more than that, but if we look at the history, work on developing the MP3 format started in 1981 and by 1991 it was standardised and ready! When did we all start blasting MP3s on old faithful Winamp? In 1997! Surprised?

What MP3s did to audio was revolutionary in more than one way. First, it made possible the transfer of CD-quality audio over low-speed mediums such as the Internet and second, it shook the roots of the music industry, forcing it to rethink strategies on how future listeners are going to get their music. It's the easiest form of pirated music you can find today.

But then, when a rogue does something that makes the masses happy, he becomes a hero! So it is with MP3, and hundreds of electronic device companies came to support it, developing players that let you lug around your treasure trove of tunes. These players come in many different flavours, though the objective is the same.

MP3 compresses the audio data to a great extent, making it possible to store 12 times the music in the same amount of memory. This makes it possible to use solid-state Flash memory to store MP3 music that can be played back while on the move. The first generation MP3 players such as the MPMan from Saehan, were



D-Link DMP 100: Great looks with decent performance and price

Find it on digit interactive

**More Info** on the test process and the products tested, **Surge** the MP3 music, check out **Playware & Mindware**

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just one-trick ponies, which did nothing more than play MP3 files stored on a memory card and looked monumental as compared to the Nomads and the Rios of today. Nowadays, these devices are capable of far more than just playing simple 128 Kbps MP3s; they can act as voice recorders, FM radios, a DJ's mixers and loop creators and even digital cameras. Not only this, there is a wide variety of mediums you can choose from, depending on what your requirements are. You can choose the compact and robust solid-state memory based players, the CD-MP3 players, the hard drive based players, or the removable disk players like the Hip Zip from Iomega.

They've also become far more affordable—you can grab a portable MP3 player for the price of a hi-end Discman. Though prices are still a bit too high in India as compared to the West, you can expect the prices to come down dramatically as the sales go up. But for now, let's see what the market has to offer.

### The Players

We tested a total of 10 MP3 devices. These players come in many different flavours, ranging from the straightforward no-frills MP3 player such as the Rio 300, to the Kodak MC3 that acts as a digital camera and a video recorder too. But then, instead of rolling all around, we focussed on the core function, that is playing music while on the move. This reduced the total number of qualifiers in the competition to eight, excluding the Kodak MC3 and the Philips MP3/VCD hi-fi system.

The Rio 300 is the most inexpensive MP3 player in the Indian market at Rs 9,280, which is still considerably higher than what most people can afford when it comes to portable audio equipment. A wide variety of inexpensive portable MP3 players are available in the US and Singapore that cost less than half the price of the Rio 300 and offer better features. However, we are yet to see these players in India. The same goes for the Nomad Jukebox that has been priced at more than twice the rate at which it sells for elsewhere.

We had our doubts when it came to CD-MP3 players. Any product that incorporates moving parts and a removable medium is bound to be less reliable and robust than a solid state device, and won't offer the same level of performance either. However, the eXpanium CD-MP3 player from Philips changed all of this. We expected it to skip, it didn't; we expected it to break open when thrown down from 5 feet onto a hard floor but it didn't; we expected it to be a real battery guzzler, it wasn't.

CDs are the cheapest medium to store data on nowadays, and with CD-burning shops all around the place, it's not very difficult to get those MP3s on your hard drive onto CDs. This very obviously makes a CD-MP3 player the most practical choice for almost anyone who wants to play MP3s on the move.

When better players such as such as the Rio-Volt and the AVC Soul player are introduced in India at reasonable prices, this scenario is bound to change even more, and make the whole deal a lot more practical. So let's go see how the current breed being sold in India fared in our tests.

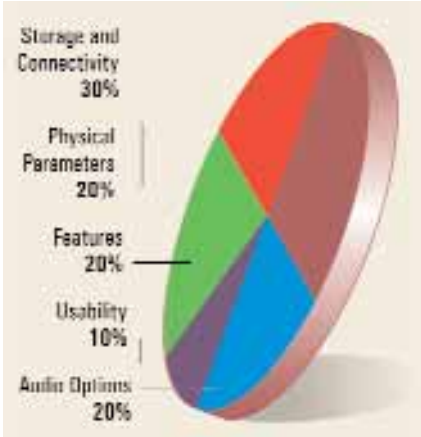
### Storage and connectivity

How many MB of music can you store? Is the audio storage medium robust enough to endure the day-to-day usage? Does it take too much time to transfer audio to the device? All these questions are as important as the audio quality or the useability of the device. The more music you can store, the longer is your playtime and you can carry that much more entertainment with you.

Well, the **Nomad Jukebox** is the ruler of this

### TEST PROCESS

While testing the MP3 players, we looked at five main parameters: storage and connectivity, physical parameters, usability, features and audio options. Within storage and connectivity, we noted the total storage space, the memory type and the connectivity type. The physical parameters included aspects such as size, ergonomics, display panel, build quality and looks. Usability measured the ease of use and display information, while




features checked for the presence of voice recording, FM Radio, Firmware upgrade, the formats supported and scope for future expandability. In terms of quality, we looked at the maximum power output, audio reproduction accuracy, audio consistency and playtime.

The weightages for the parameters are as shown in the pie chart.

domain. With the 6 GB of storage space its tiny mobile hard drive carries, the Jukebox is definitely an offering for the hardcore collector who likes to lug around his entire arsenal with him. Although most such enthusiasts have a larger arsenal than that, the storage is still quite sufficient. The real bother is transferring so much of content to the Jukebox at miserable speeds, averaging at 500 KBps. At this speed it would take you more than 20-25 minutes to transfer a CDs worth of content at peak speeds.

The second in reckoning was the eXpanium, the CD MP3 player from Philips. Just pop in an MP3 CD and out comes a stream of audio. And you can carry as many CDs as you want, swap them whenever you wish. No audio transfer software, no cables, no messy and slow-speed downloads to the player.

Then come the whole bunch of solid states. These MP3 players have no moving parts and store your songs on Flash Memory which makes them very robust and compact and very expensive at the same time as compared to other mediums. The Nomad II MG was the one that came out tops in this category, with 64 MB of built-in memory and a USB connector that offers more than 350-400 Kbps of data upload speeds, which is around twice as fast as the fastest parallel port based player we received for testing. The Nomad II MG took around 1:04 minutes to complete our file transfer test, which took around 1:59 minutes on the Rio 300 (32 MB), whereas the old Nomad (32 MB) and the Philips Rush (32 MB) took more than eight minutes to finish this test. The D-Link DMP100 was better than both the Nomad and the Rush, taking around 5 minutes to finish the test.

### Physical parameters

The size of the device is an important factor when it comes to handling, as a larger device would obviously be more troublesome to carry around. Though the player might have all the controls to manipulate the audio the way you want, if they aren't in the right place, operating the player becomes a hassle. A clear and visible display adds to the looks and usability of the device, as you should be able to see what song is playing. A poor build quality means a shorter lifespan for your device. MP3 players aren't cheap and these devices need to be sturdy, as you would want to take your player along when you trek, travel or jog. Besides, the MP3 player is your personal accessory so it has got to look good!

## MP3 Everywhere!

A simple portable MP3 player was just the beginning. The ability to pack in an MP3 player in a package as small as a matchbox has fuelled the growth of devices that support MP3 playback as their secondary function. Devices ranging from watches, mobile phones, digital cameras to PDAs and car navigation systems are packing in the ability to act as an MP3 player, but are they really worth it?

Most such devices come with less memory than what is optimal for storing decent playtimes of music and, as this memory is shared with other things such as photographs or GPS data, it makes it even less usable. Above that, these devices generally cost about as much as a new MP3 player and a standard similar mobile phone or digital camera, and aren't too feature-filled either. These devices are yet to become mature and usable, but provide a nice peek into the future of integrated audio players.

The **Philips Rush** was an all out winner in this category; so much so that we ended up giving it full marks on all the parameters in this particular test category. A large and clear display right in the centre, well designed and accessible controls that are are well labelled and easy to understand and a compact and sleek shape. The only one that came anywhere close to the Rush was the Nomad II MG. This sleek and sturdy player has all its pieces set right except the rubber controls which are placed on the side of the player, making them slightly harder to use as compared to a device that has buttons in front. It comes with a small remote control that allows you to control simple functions such as next song, pause, play, etc and fits in between the player and the headphones. You can use it as a tiepin or a collar controller. This eliminates the need to grope for the buttons while the player is in a carry pouch or in your pocket.



Casio WMP-IV: A show-off tool rather than a utility device

The Nomad looks just as good as the Nomad II MG, but has a very small display that can be quite difficult to read in low light conditions. Just like the Nomad II MG, it has all its controls on its sides, but much smaller hard plastic buttons that are a pain to operate. The D-Link has well placed controls, good looks and an effective display but feels a little fragile as compared to other players. The Casio WMP-1V is small and funky but unrealistic and highly uncomfortable. It has really small and downright painful controls.

Both the Nomad Jukebox and the Philips eXpanium were just about as big as most Discmans. This much space allows for a lot of nice controls and display configurations, but the Nomad Jukebox was the only one that used it efficiently. The eXpanium has a small, one-line display that doesn't even display the name of the song playing, though the controls were just fine.

### Usability

The easiest to use device would be one that is easily accessible with one-touch buttons to perform the most frequent tasks, and is well labelled. Menus are nice, but only when going into detailed levels and more complex options. Ease of use is a combination of many things when it comes to an MP3 player: easy readability of the display information, clear instructions outside the display area and the ergonomics of the controls. Display information is as necessary as the controls, as you generally need to have display for song names/numbers, playtime and extra functions such as repeat, equalizer, etc. Icons that represent a certain feature being active or inactive are also most welcome.

The **Nomad Jukebox** was a clear winner in this area, with its large and detailed display, easy-to-use and well-labelled controls and an easy interface for browsing

and listening to music. You can use the interface to sort your music as albums, genres and even use custom playlists. The Philips Rush holds second place. With its 'big stereo system' graphics, volume control displays and a simple interface, it is surely the most usable compact player around.

The Rio and the D-link were both very much similar in their approach to the interface and controls. Both have one round button in the front to navigate through the audio, and all other additional controls on the sides and around or below this button, but the D-Link shows the name of the song you're playing whereas the Rio doesn't.

**Features**

This was a real tiebreaker in this shootout as well as one of the major factors that helps you decide what kind of device you want. Features such as voice recording capability, FM radio and surround sound are the ones that add flavour and extra functionality to a device. Voice recording capabilities can enable you to use your MP3 player as a note taker, conversation recorder, and a dictaphone. The same goes for FM radio; it's nice to be able to switch to something else when you run out of music to play from amongst those on the device.

Support for other upcoming formats such as Liquid Audio or Windows Media Audio (WMA) is another important feature. WMA sports a smaller file size as compared to most MP3s with almost similar quality, thereby increasing the amount of content you can store on the device. Features such as upgradeable firmware and the ability to add extra memory, power the MP3 player with extra batteries or a car adapter, are also good features to have.

The **Nomad II MG** was the champ here. With an upgradeable firmware, it supports the ability to add 128 MB of extra memory to the player, extending the total memory to 196 MB. Just like the old Nomad, it also provides FM radio although you would have to be in a high reception range of the radio station to be able to get great reception. Voice recording and playback is a standard feature in the Nomad, Nomad II MG, and the D-Link DMP100. The Nomad Jukebox

## SCORE BOARD Specifications

**The MP3 Players**

| Model | Casio WMP-1V | Creative Nomad | Creative Nomad II MG | Creative Nomad Jukebox | Diamond Rio PMP300 | D-Link DMP - 100 | Philips Expanium | Philips Rush |
|---|---|---|---|---|---|---|---|---|
| **Specifications** | | | | | | | | |
| Storage Space | 16 MB | 32 MB | 64 MB | 6 GB | 32 MB | 32 MB | 650 MB | 32 MB |
| Memory type | Solid state | Solid state | Solid state | Hard drive based | Solid state | Solid state | CD-ROM | Solid state |
| Connectivity option | Parallel | Parallel | USB cable | USB | Parallel | Parallel | None | Parallel |
| **Features** | | | | | | | | |
| Voice Recording | No | Yes | Yes | Yes | No | Yes | No | No |
| FM Radio reception | No | Yes | Yes | No | No | No | No | No |
| Upgradeable firmware | No | Yes | Yes | Yes | No | No | No | No |
| **Expandable** | | | | | | | | |
| Memory | No | Yes | Yes | No | Yes | Yes | No | Yes |
| Battery | No | No | No | No | No | No | No | No |
| **Formats Supported** | | | | | | | | |
| MP3 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| WMA | No | No | Yes | Yes | No | No | No | No |
| WAV | No | No | No | Yes | No | No | No | No |
| Upgrade | No | No | Yes | Yes | No | No | No | No |
| **Performance** | | | | | | | | |
| Size | Easily Pocketable | Easily Pocketable | Easily Pocketable | Discman Size | Easily Pocketable | Easily Pocketable | Discman Size | Easily Pocketable |
| Interface | Normal | Normal | Normal | Easy | Easy | Easy | Hard | Easy |
| Display panel info | Inadequate | Inadequate | Adequate | Detailed | Inadequate | Adequate | Inadequate | Adequate |
| Build quality | Good | Good | Impeccable | Good | Good | Acceptable | Acceptable | Impeccable |
| Looks | Good | Real Cool | Real Cool | Good | Plain | Good | Good | Real Cool |
| Ergonomics | Poor | Poor | Acceptable | Smooth | Acceptable | Acceptable | Acceptable | Smooth |
| Ease of use | Hard | Normal | Normal | Easy | Easy | Easy | Normal | Easy |
| Battery life | Good | Good | Good | Poor | Good | Good | Good | Good |
| Maximum audio power | Poor | Average | Good | Poor | Good | Average | Good | Good |
| Audio Reproduction Accuracy | Poor | Good | Good | Good | Good | Average | Average | Poor |
| Skip Buffer/Audio consistency | Good | Good | Good | Good | Good | Good | Good | Good |
| **Contact** | | | | | | | | |
| Price | Rs 14,995 | Rs 13,500 (32 MB), Rs 17,000 (64 MB) | Rs 21,500 | Rs 33,500 | Rs 9,280 | Rs 10,000 | Rs 12,990 | Rs 23,990 |
| Vendor | Casio India Company | Compuage Infocom | Compuage Infocom | Compuage Infocom | Memphis Technologies | Dlink India | Phillips India | Phillips India |
| Phone | 011-6534538 | 022-8305501 | 022-8305501 | 022-8305501 | 022-8523439 | 022-6902210 | 022-6912333 | 022-6912333 |
| **Rating** | **C+** | **B** | **B+** | **B+** | **B** | **B** | **B** | **B** |

comes with a stereo line in, which is good for recording high-quality stereo audio to the device but it stores this audio in an uncompressed WAV format, thereby taking up enormous amounts of memory. The Nomad Jukebox and the Nomad II MG were the only players that were capable of firmware upgrades, as well as the only two capable of playing WMA files. The Philips Rush and the Casio WMP-1V weren't even capable of playing any VBR (Variable Bit Rate) or more than 128K MP3 files, although all others including the Philips eXpanium played VBRs and other MP3 bitrates just fine. The eXpanium plays multisession CD-Rs and RWs just fine.

The Nomad Jukebox is a real battery guzzler; it uses four custom made AA-sized rechargeable batteries that can be charged right inside the player itself. While it also comes with an extra set of rechargeable batteries, thereby extending the battery life to a certain extent, the pain of recharging both pairs separately still remains. The best in terms of batteries is the Rio 300, which operates off just one AA-sized alkaline battery and works just fine for more than six hours. Even the Nomad comes with two AAA-sized rechargeable batteries that can be charged using the charging cradle that also doubles up as the data cradle, eliminating hassles with cables. All other portable players use standard batteries.

In terms of memory upgradeability, all the 32 MB players support upgrades of up to 64 MB, with the Nomad even capable of going up to 96 MB with a 64 MB SmartMedia card. The Philips Rush can be upgraded by putting in another memory card of 64 MB, but this is rather pointless as you would first have to remove the existing card, since the base unit doesn't come with any built-in memory, just a 32 MB Smart Media card.

### Audio tests

When you're on the move, your headphones need to be loud to be audible, just the regular audio level won't do. All the MP3 players ship with poor quality headphones, as a result of which you miss out on so much fidelity while listening to high quality audio. So the first step is generally to grab a good pair of headphones. Good headphones require more power to drive them, so your MP3 player needs to be more powerful. The louder an MP3 player is, the larger and more power hungry headphones it can drive.

Real quality means the MP3 player should be capable of producing audio just the way it is, and as accurately as possible. The audio playback should be consistent and without any jerks or skips caused due to movements or other such common activities that an MP3 player is subjected to. The device should be capable of offering a sufficient amount of playtime. The playtime is the maximum amount of time for which it can play near-CD quality audio using the lowest bit rate in any audio format it supports. For MP3s, near-CD quality is 128 Kbps and for WMA the very same quality can be achieved at half the bit rate, hence doubling the total playtime.




Philips eXpanium: Its one line LCD display shows only the song number

When it comes to audio power, only two MP3 players were really capable of getting our big reference headphones to max out. The D-Link DMP 100 and the Philips eXpanium both offered loud and clear sound, although the D-Link's extra bass equalizer settings were a little distorted at high volumes. The Rio 300, Nomad and the Nomad II MG were very crisp in both high frequency audio and low frequency audio and even though you can't call them loud, they were enough to drive the headphones to a perfectly acceptable level, without any distortion whatsoever.

When it comes to audio reproduction accuracy, almost all the MP3 players except the Philips Rush performed just fine. The Philips Rush doesn't support 256 Kbps MP3s, and hence the accompanying interface. The Real Jukebox re-encodes all such MP3s to 96 Kbps CBR MP3s and transfers these to the player, hence loosing out on a lot of quality. Both the D-Link and the eXpanium were slightly heavier on the bass reproduction all around, even with the bass expander and the equalizer turned off. The Casio MP3 watch failed to run any of these tests entirely as it didn't even support any conversion on the interface for re-encoding the MP3s into a format compatible with the device.

All the MP3 players, including the Jukebox and the eXpanium were flawless when it comes to audio consistency. None of them skipped a beat. We tried everything imaginable to make these devices skip; from rattle moves to the hip swings and even bouncing them off the floor, but they just refused to skip a beat.

The **Nomad Jukebox** was obviously the best when it came to playtime. With its enormous hard disk storage, it can pack in around 200 hours of near-CD quality music in the WMA format. The second was the eXpanium, which can play a CD full of MP3s and the third was the Nomad II MG with WMA 64 Kbps audio. This player is capable of carrying 136 minutes of near-CD quality audio, which is the best amongst all the solid-state players we tested. All the other 32 MB players are capable of doing 34 minutes of playtime at 128 Kbps MP3.

## Variable Bit Rates

Variable Bit Rates (VBR) is a method of encoding that makes allowances for the variation in slices of sound that an MP3 file is made up of. It ensures consistently high audio quality throughout an encoded file by making intelligent bit-allocation decisions while encoding. The encoder allocates a higher bitrate in complex sections to ensure audio quality. In simpler sections such as those containing silence or a relatively narrow range of frequencies, it allocates fewer bits. Thus, VBR is ideal for when consistent audio quality is more important than the encoded MP3 file size.

Several MP3 players may have trouble reporting the duration of VBR-encoded files and/or not have proper support for it. Most new releases of MP3 playback software can play back MP3 encoded files. The popular Winamp player has had support for it since the release of version 2.05. However, some portable MP3 players may not have support for VBR.

## CONCLUSION

The **Nomad II MG** and the **Jukebox** rule the roost as of now. The Jukebox is ideal for the big boys to play with, while the Nomad II MG is the sleek and suave power accessory for those who are happier with small and feature-filled packages that suit their style. Both have great build quality, a nice interface, good audio transfer speeds, loads of features, support for the WMA format and come with a nice software bundle. Other features include quick firmware upgrades that enhance the functionality, such as support for larger memory cards in the Nomad II MG, to a more stable, reliable interface and the ability to use the Nomad Jukebox as a mobile hard drive. These may be the best performers available in the Indian market right now, but they don't come cheap. At around 1.5 to 1.8 times more than the price they sell for in the US, these devices are a bit too expensive for the average user.

At Rs 33,500, the Jukebox costs nothing less than a whole PC in India, while in the US it costs $265, which is less than half the current Indian price. Import duties, taxes, and the vendors overpricing these products is killing a huge market share that these devices could gain.




Nomad II MG: A sleek and suave power accessory




Nomad Jukebox: Big storage, easy-to-use interface

The more practical alternatives to these two were the **D-Link DMP-100** and the **Philips eXpanium**, with the Rio PMP 300 right behind the D-Link in terms of the price to performance ratio. The D-Link comes at Rs 10,000 with 32 MB of memory that can be upgraded to 64 MB. It supports voice recording, has a nice interface, looks cool with its translucent iMac kind of looks and is very easy to use. Conversely, even though the eXpanium doesn't excel in the features range, it's a very practical device when it comes to playing music on the move. Just pack in your CDs, a couple of AA battery packs and you're set for a long journey full of music. The Rio 300 is the cheapest of them all, and if you don't mind loosing those extra features that the D-Link offers, is a fairly good player that can be upgraded to 64 MB.

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Photograph: Ashesh Shah

## IN TEST: 13 DIGITAL CAMERAS

# Click & Tell

Aspiring photographer? Get your creative juices going with the best digital camera around. Pick one from this assortment and start clicking

ALIASGAR PARDAWALLA and RAHUL SHARMA

Wouldn't it be fun if you could click photographs at your own leisure and without having to worry about the roll running out? And at the same time, tweak your camera the same way you do your PC. This is all possible with new state-of-the-art digital cameras available today. These babies easily fit into your hand and are so feature rich that with some of them you can get much better photographs than what your old 35 mm camera can give. Features and options such as black and white photograph, panorama mode, etc, and the bundled software using which you can change images radically, make you feel like a full time artist.

### Behind the camera

A good digital camera is an expensive piece of hardware and therefore a one-time purchase. So when purchasing your digital camera, keep in mind the purpose that you would need it for. The cameras we tested were not professional class cameras, but were meant more for the amateurs and photography enthusiasts.

Find it on digit interactive

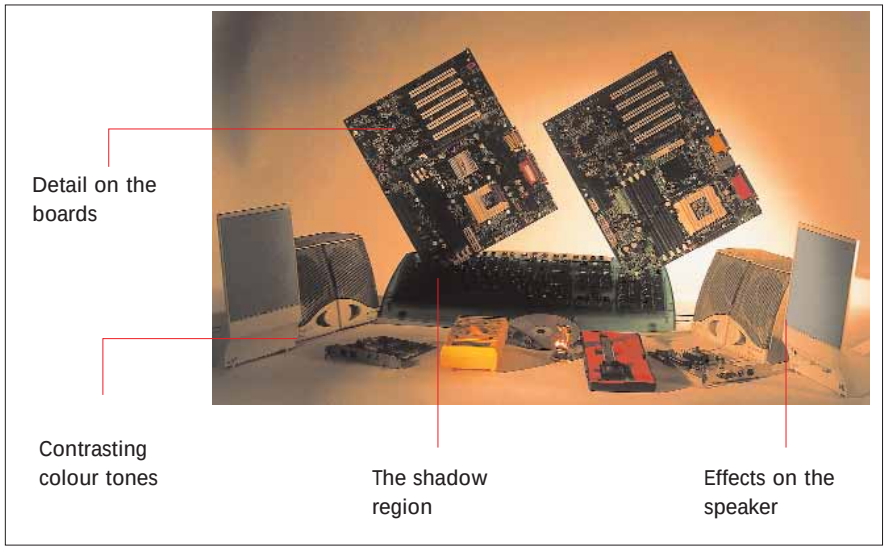
**More Info** on the test process and the products tested, check out **Mindware**

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## TEST PROCESS

The cameras were divided into two categories: cameras with resolutions above 1024x768 and those below it. These categories were decided upon keeping in mind that 1024x768 is a decent resolution that is clear enough on a monitor and in printouts. We conducted two different tests on the cameras: the image quality and resolution test and the feature test. For the image quality test, we set up a target, which displayed elements such as gradation in shading, specular effect, colour tones, etc. The targets used were two motherboards, two speakers, a keyboard, graphics card and soundcard, a metal piece and a CD. In the resolution test we had a resolution chart, which was photographed from prespecified distances and the images were then tested on the PC to check how many blocks the camera detected.




Both the image quality and resolution test images were downloaded on to the computer and compared with the master image (main target image) taken with a regular 35 mm camera from the same distance. In the feature test, the cameras were tested under different photography conditions for the onboard features they had. Apart from this, regular features such as flash, zoom lens, bundled software, storage media and accessories were also checked for.

The cameras that we tested belonged to brands that are currently available in India through dealers. After sales service and parts for these cameras are available through service centres in metro cities. The next five years should see digital cameras and printers become common peripheral devices, just like CDs and graphics cards. As PC penetration increases among both home and office segments, sales for digital cameras would also increase alongside.

### Image test

The image quality test tells you about the overall quality of the camera, including its sensing element, lens and electronics that go into the making of a digital camera.

Details: Out of the 13 cameras we tested, not many were able to detect small details. For instance, the net on the speakers appeared a light shade of grey and it was difficult to make out what it was made up of. Details are important during close-ups or when you are capturing items with fine details (such as when your girlfriend's dressed to kill). In this area we found that the Kodak DC-3400 picked up details better than any other camera. Not only was it able to pick the minute components on the motherboard, but also fonts as small as 12 points. The Kodak DC-4800 came second, although the image taken by this camera was very grainy, which made it look very hazy. But the camera still picked up details such as the fonts on the chipset and the hole on the socket, which even the DC-3400 could not pick up.

Colour: In the colour reproduction test, Fuji gave the best results. This camera detected colour better than any other, but the overall image was slightly dark. Dark areas were also visible on the left side of the keyboard due to which the letters on the keys were not visible, since the amount of light projected in this area was kept low. In the real world, this simply means that if you were clicking an indoor photograph and if some parts of the frame contains lesser light than the others, the people in that area wouldn't be visible in the final image. And if one of them happens to be your wife, God help you!

Specular effect: In the specular effect test, the Olympus Camedia C-860L gave perfect results. The specular effect on the metal horse was reproduced as is. This was followed again by the Olympus Camedia 990 Zoom, which did well but suffered a bit in terms of the contrast, which was lesser than the C-860L. Among the cameras that had less than 1024x768 resolution, D-Link's Digi-Link gave good results in the specular effect test. This means that if you were clicking a photograph of your bald father-in-law, who is standing under a bright 100 W bulb with its reflection on his shiny head, the photograph taken by either the Olympus Camedia C-860L or 990 Zoom would give you the best possible results as opposed to any other camera. The same is true for the low-end Digi-Link camera.

The final results of the image evaluation test showed that the **Kodak DC-4800** gave the best overall results in terms of detail, brightness and contrast, as well as image likeness, which was much closer to the actual situation created, than any other camera. It gave good results in terms of details and clarity but allowed more light into the picture than required in spite of keeping the setting on Auto.

On the other hand, the Fuji FinePix 2400 had the best colour detection and did pick the details to some extent




Canon Powershot: Okay performance

## CCD vs CMOS

The CCD (Charge Couple Device) is made up of small "photosites" arranged in patterns of groups and columns. This can range from 640x480 pixels to as high as 1600x1200 pixels. Together this makes the CCD, whose final pixel count ranges from a few hundred thousand to a few million pixels. The individual size of each pixel is about 10 millionth of a meter.

Transistors and sensors are located in the CMOS (Complementary Metal Oxide Semiconductor). These transistors are used to convert analog information into digital information, which is further processed by other circuitry and the image is formed. Due to this transistor the sensitivity of the CMOS is lower than that of the CCD since the light hitting the areas where transistors are located is not stored, and this information is completely lost. The CCD is more power consuming than the CMOS, with a normal CCD consuming 100 times more power. While CMOS is cheaper and easier to fabricate, it is more susceptible to noise and is one of the reasons why it can't produce as high an image quality as the CCD. These are some of the prime reasons why CCDs are used in high-end, high-resolution cameras and lower end cameras, especially Web-cams, with resolutions of 640x480 have CMOS sensors.

on the speaker, but the image was dark where the intensity of light was kept low.

**Resolution test**

The resolution chart for this test had nine blocks, of which block number five and onwards were very small, with the ninth block being the most difficult to detect. The **Sony DCS-P1** passed this test with flying colours. This camera detected three-and-a-half blocks, which no other camera was able to detect, due to its 3.3-mega pixels CCD (Charge Couple Device) and the lens of the camera. Other cameras such as the Canon IXUS and Kodak DC-4800 could only detect three blocks. Since the distance between the cameras and the resolution chart was nearly 1 metre, it is understandable that the cameras were unable to detect at least half the total blocks. However, this test helps us understand which camera can pick up finer details if the target has sufficient light.

**Feature test**

We categorised the camera features as optics, operational modes and miscellaneous, of which optics and operational modes carry most weightage.

Optical/digital zooms: Optical zoom means the actual change in the focal length, which was in the range of 0x-3x in the cameras we tested. Digital zoom magnifies the image, but the quality of the image suffers.

Among the cameras tested, the Sony DSC-P1 had a 3x optical zoom and 6x digital zoom while the Kodak DC-4800 had a 3x optical and 2x digital zoom. Other cameras such as the Kodak DC-3400 and the Canon Power Shot had 3x optical and 2x digital zoom. The low-end cameras, which include the Intel Pocket Camera, D-Link Digi-Link and Kodak EZ200 came with a fixed focal length. These three cameras are VGA cameras, which don't usually come with an adjustable lens.

The Intel and Digi-Link both gave tolerable photographs in bright light conditions. The Intel camera came with a lens adjustment for the video clip, which can be adjusted manually by rotating the plastic cap on the lens until the image looks clear enough on the computer monitor.

Sensing Element: There are two types of sensing elements used in digital cameras, CCD and CMOS. Out of the cameras in the 1024x768 pixels and above range, the Sony DSC-P1 camera had a maximum pixel count of 3.3 mega pixels while the Kodak DC-4800 had a 3.1 mega pixel count and was placed second. However, the Fuji, which produced very good image quality in terms of colour, had a CCD of 2.1 mega pixels. Good image quality is not attributed solely to the CCD but also the support electronics circuitry, which is where the Fuji scored higher.

Shutter speed: The faster the shutter speed, the crisper the picture. High-end cameras such as the Kodak DC-4800 and the Sony DSC-PI had a manual setting for the shutter speed, whereas cameras such as the Kodak DC-3400 and the Canon PowerShot A10 selected the shutter speed automatically, according to the exposure and other settings selected by the user. The Kodak EZ200 camera, which is a low-end camera, had the fastest shutter speed of 1/500 second and the D-link Digi-link had

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a shutter speed of 1/4-1/2000, which is quite fast for a low-end camera. But here again the camera decides the shutter speed, not the user.

Storage media: The cameras in the market today generally come with 8 MB storage, with exceptions such as the Kodak DC-4800, which comes with a 16 MB compact flash card. Amongst the cameras with resolution lower than 1024x768, only the Kodak EZ200 had 4 MB of built-in memory, while other cameras such as the D-Link's Digi-Link and Intel Pocket camera had built-in 8 MB flash memory. The Kodak MC3 had an inbuilt MP3 player and 16 MB of compact flash, which is only sufficient for either images or MP3s.

White Balance: Lower-end VGA cameras do not have a manual option for white balance setting. These cameras adjust the setting automatically. While almost all the cameras had the white balance setting, the Fuji FinePix 2400 had a total of six white balance settings. In the low-end category, the Kodak mc3 and EZ200 came with an auto white balance, whereas the Intel and D-Link's Digi-Link didn't have the feature at all. This is bad as a basic function like this is necessary in all digital cameras.

Dimension and weight: These are important criteria for any digital camera as these are portable devices and need to be carried by hand while in use. A bulky camera is difficult to hold for long and could affect the photographs you take to some extent. The camera that outshone the others here was the Canon IXUS, which is just a little bigger than your visiting card and weighs only 190 gms. The Sony's Cybershot DSC-P1 is very compact as far as dimensions go, weighing only 250 g, and can be carried in your trouser pocket. Among the low-end cameras D-Link's Digi-Link was the smallest, even smaller than the Canon IXUS and also the lightest, weighing only 110 g. It fits easily in your palm.



Kodak mc3: Good bundled software

LCD Screen: The LCD screen size and quality is very important if a difficult target needs to be shot, and shooting it through the optical viewfinder is not possible. Cameras such as Sony's DSC-P1, Kodak DC-4800 and Fuji FinePix 2400 had very good, crisp and bright LCD screens. The image is clearly visible in the

## Printing your Photograph

If you thought that buying the best camera in the country could ensure you best quality photographs, then you're right. But if you think this also entitles you to high quality printouts on a normal A4 size paper, on your low-end printer, then you're wrong. A high-resolution printout of the photographs that you click on your digital camera would need the best photo printer and glossy paper (the special shiny paper used for printing photographs). There are many photo printers available in the market, which are a shade costlier than a regular colour inkjet printer but are optimised for photo printouts.

Glossy paper in A4 size would cost you around Rs 20 and a colour printout of the photograph at the best resolution the camera has to offer would cost you another Rs 15. The total cost of the photograph will come to around Rs 30-35, which is still more expensive than a regular photograph from a conventional camera. However, here you have an option of printing only the snaps you want which is not the case with a regular roll, where you have to print all 30-35 snaps.

A new technology just released by Epson, called print image matching, lets you connect your camera directly to the printer and get a printout of the photograph, which is as good as a regular photograph, without loosing any information. This is the same for any image viewing software, which sets its own print command. Since a digital camera captures the images in wider colour spaces, the printer is unable to access this information as the image files are optimised for limited computer monitor colour space. These restrictions have been overcome by these new printers and, hence, produce images as seen from the camera lens. So if you plan on buying a digital camera, you could spend a little more on a good printer and have a photo-finishing lab of your own.

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SCORE BOARD

# Specifications

## Snapshots of the Digital Cameras

| | ABOVE 1024X768 RESOLUTION | | | | | | | | | BELOW 1024X768 RESOLUTION | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Brand** | Canon | Canon | Fuji | Kodak | Kodak | Kodak | OLYMPUS | OLYMPUS | SONY | D-LINK | INTEL | Kodak | Kodak |
| **Model** | IXUS | PowerShot A10 | FinePix 2400 | DC3200 | DC3400 | DC4800 | CAMEDIA C-860L | CAMEDIA 990 | DSC-P1 | Digi-Link | Pocket PC | EZ200 | mc3 |
| **Storage Media (in MB)** | 8 MB | 8 MB | 8 MB Smart Media | 8 MB | 8 MB | 16 MB | 8 MB | 8 MB | 8 MB | 8 MB | 8 MB | 4 MB internal | 16 MB |
| **Max Resolution** | 1600x1200 | 1280x960 | 1600x1200 | 1152x864 | 1760x1168 | 2160x1440 | 1280x960 | 1600x1200 | 2048x1536 | 640X480 | 640x480 | 640x480 | 640x480 |
| **Optical/Digital Zoom** | 2x/4x | 3x/2x | 3x/2.5x | 0x/2x | 3x/2x | 3x/2x | 2x digital | 3x/2x | 3x/6x | Not present | Not present | Not present | Not present |
| **Sensing Device** | CCD/2.1 mega pixels | CCD/1.3 mega pixels | CCD/2.1 mega pixels | CCD/1.0 mega pixels | CCD/2.0 mega pixels | CCD/3.1 mega pixels | CCD/1.3 mega pixels | CCD/2.1 mega pixels | CCD/3.3 mega pixels | CMOS | CCD | CCD/0.3 mega pixels | CMOS |
| **Size of LCD Screen** | 38.1x38.1 mm | 22.4x31 mm | 1.6 inch | 31.5x23.3 mm | 45.7x45.7 mm | 36.7x27.7 mm | 36.7x27.5 mm | 36.9x27.5 mm | 38.1x38.1 mm | Not present | Not present | Not present | 31.25X24.34 mm |
| **Shutter Speed** | 1/2-1/1500 | 1-1/5000 | 1/2-1/10,000 | 1/4-1/500 | 1/2-1/755 | 1/1000 | 1/2-1/500 | 1/2-1/1000 | Not available | 1/4-1/2000 | Not available | 1/500 | Not present |
| **Operating System** | Win9x/NT 4.0 | Win98/ME/2000 | Win98 | Win9x/2000 | Win9x/NT/2k | Win98/2K | Win9x | Win9x/NT/2K | Win9x/Me/NT/2K | Win98/ME/2K | Win98/Me | Win9x/Me/2K ArcSoft, | Win9x/Me/2K |
| **Packaged Software** | Zoom Browser EX 2.6/Photo Recorder1.2.4/ PhotoStitch 3.1/ RemoteCapture | Zoom Browser EX 2.6/Photo Recorder1.2.4/ PhotoStitch 3.1/ RemoteCapture | Exif Viewer, DP Editor, Adobe ActiveShare, PhotoDeluxe image-editing | Kodak DC3200 Driver, Kodak Picture Now | Kodak DC3400 driver, ArcSoft PhotoImpression, Adobe Acrobat Reader | ArcSoft Panorama Maker, Adobe Acrobat Reader, Kodak DC400 Software | Camedia Master, Acroread, QuickTime | Camedia 2.1, Camedia suite, Instruction CD | MGI Photsuite V8.1, VideoWave, Driver | Presto! MR. Photo, Photodesigner, Presto! Videoworks | Intel snapshot, Scene Recorder, Audio Recorder, E-mail Postcard, Games, Gallery | PhotoImpression/ VideoImpression | Acroread, ArcSoft PhotoImpression, QuickTime, Real Player |
| **Extra Accessories** | Compact Flash, Battery pack, Charger, USB, Video out and wrist cables | Manual, Wrist Strap, USB cable, Four AA batteries, software and Driver | AC adapter, battery charger, batteries, soft case, SmartMedia cards | Serial cable | Serial cable, video out cable, USB cable | Power cord, USB cable, Lens cover | Serial/video cable, manual, 8 MB Smart media, carry pouch, wrist strap | Carry pouch, manual, video out and serial cable, four AAA batteries | USB cable, 8 MB memory stick, Info Lithium battery, charger, wrist strap | USB cable, installation guide, two AA batteries, carry pouch, wrist strap | Pouch, wrist strap, camera stand, 9-feet USB cable, software-driver CD | USB cable, battery pack, camera stand, wrist strap | USB cable, USB USB cradle, AV cable, head phone. |
| **Price** | Rs 46,099 | Rs 26,750 | Rs 36,000 | Rs 18,000 | Rs 35,000 | Rs 49,000 | Rs 21,000 | Rs 35,000 | Rs 49,990 | Rs 8,500 | Rs 9,750 | Rs 9,000 | Rs 20,000 |
| **Dimension (WxLxH)** | 87x57x26.9 mm | 110x71x37.6 mm | 125x65x39 mm | 11.76x53.34x81.28 mm | 132.08x53.34x 76.20 mm | 119.38x68.58x63.5 mm | 128x65x47 mm | 127x66.5x53 mm | 113x53.9x43.8 mm | 96x58x31 mm | N/A | 91.44x35.55x68.58 mm | 104.14x66.04x 38.10 mm |
| **Weight (in grams)** | 190 | 250 | 350 | 215 | 332 | 328 | 235 | 270 | 250 | 110 | N/A | 133.24 | 156 |
| **White Balance** | Auto, daylight, cloudy, tungsten, fluroscent light | Auto, daylight, cloudy, tungsten, fluroscent light | Daylight, cloudy, daylight fluorescent, warm white fluorescent, etc (6 modes) | Auto, daylight, fluroscent, tungsten | Auto, daylight, fluroscent, tungsten | Auto, daylight, tungsten | Full auto, sunlight, overcast skies, Tungsten, Fluroscent light | Auto, daylight, overcast, tungsten and fluro light setting | 4 mode auto white balance | Not available | Not available | Present | Not available |
| **Macro Mode** | Not available | Not available | 3.9 inch | Not available | Not available | 0.2 metre | 0.1 metre | 0.2 metre | 10 cm | 4 cm | 5 cm | 30 inch | Not available |
| **Compression mode** | 1600x1200/ 1024x768/640x480 | 1280x960/ 1024x768/640x480 | 1600x1200, 1280x960/640x480 | Best/Better/Good | Best/Better/Good | 7 modes | 1280x960 (SHQ), 1280x960 (HQ), 640x480 | Noncompression SHQ, SHQ, HQ and SQ | 2048x1536, 1600x 1200, 1280x968, 640x480 | Not available | 2 | 2 | Not available |
| **Contact** | Mahatta Camera Corporation | Mahatta Camera Corporation | ockam@vsnl.com | Neoteric Informatque | Neoteric Informatque | Neoteric Informatque | Komal International | Komal International | Best International | D-Link India | Ockam Infotech | Neoteric Informatique | Neoteric Informatque |
| **Phone** | 022-8504608 | 022-8504608 | 022-8514441 | 022-4172600 | 022-4172600 | 022-4172600 | 022-2705725 | 022-2705725 | 022-2611050 | 022-6902210 | 022-6330375 | 022-4172600 | 022-4172600 |
| **Fax** | 022-8508065 | 022-8508065 | 022-8504044 | 022-4163679 | 022-4163679 | 022-4163679 | 022-2610219 | 022-2610219 | 022-2624795 | 022-6528476 | 022-6338764 | 022-4163679 | 022-4163679 |
| **E-mail** | mccbom@ vsnl.com | mccbom@ vsnl.com | k_mohan/jpl@ jindals.com | sales@neoteric-info.com | sales@neoteric-info.com | sales@neoteric-info.com | indiaolympus@ vsnl.com | indiaolympus@ vsnl.com | bestint@vsnl.com | ssehgal@dlink-india.com | ockam@vsnl.com | sales@neoteric-info.com | sales@neoteric-info.com |
| **Web site** | NA | NA | www.jindal photofilm.com | www.neoteric-info.com | www.neoteric-info.com | www.neoteric-info.com | NA | NA | NA | www.dlink.co.in | | www.neoteric-info.com | www.neoteric-info.com |
| **Overall (%)** | 72.21 | 68.56 | 70.42 | 59.91 | 72.19 | 74.72 | 62.18 | 70.09 | 77.1 | 53.79 | 57.91 | 53.92 | |
| **Rating** | B+ | B+ | B+ | B | B+ | B+ | B+ | B+ | A- | B | B+ | B | B- |

screen even at a distance of half to a quarter meter away. The Kodak mc3 had the worst LCD screen, which was pitch black when turned on, and absolutely nothing was visible even when held in front of a light source. Clicking photographs with this camera is absolute guesswork.

On the other hand, cameras such as the Intel Pocket camera and D-link's Digi-link didn't have an LCD screen but a small LCD display at the top which displayed the number of snaps taken and other settings such as flash on/off, burst mode, etc.

Software and drivers: Any digital camera is incomplete without the software, which is required to download the image on the PC. Some low-end cameras such as the Intel Pocket Camera were bundled with the best software, which could not only download the images and video clips but also edit and optimise them for the Web. Also included were games based on the concept of motion detection, a totally new concept available only in Intel cameras. You can connect the camera to your PC and start a game of, say basketball. You then move your hand in front of the camera and the ball actually bounces according to your hand movements.

The Kodak mc3 was another camera with good bundled software that detects the camera the moment it is connected to your PC. The software starts downloading the images automatically and even displays the battery status for a few seconds while the download is in progress. High-end cameras such as the Kodak DC-3400 came with the ArcSoft PhotoImpression software, which is really simple to use and easy to understand. The Canon PowerShot A10 came with useful software such as PhotoStich 3.1, using which you can stitch all your photographs in a linear strip and view them by just scrolling across.

## CONCLUSION

In the higher end category the clear winner was the **Sony DCS-P1** 3.3 mega pixel camera. The camera was loaded with features such as taking snaps in black and white and sepia mode, adjusting white balance, etc, coupled with ease of navigation. Although it did not produce the best results in terms of image clarity, it did extremely well in the resolution test.

Runners up was the Kodak DC-4800. This 3.3 mega pixel camera did well in the entire test but lost to Sony only in terms of features. This camera shone in picking up details but gave a grainy overall image. Canon IXUS came third in the shoot out. This camera did well in picking up details and even produced colour well, except that it showed dark areas in the image, wherever light was low. It came with a detailed manual, good bundled software and rechargeable batteries, which helped it score in the feature test. The Canon IXUS was one of the lightest and good-looking cameras in its category.

Among the low-end cameras, **Intel** emerged the winner. This camera had excellent bundled software with a very clean interface and was very easy to use. The camera also had a host of features such as the ability to store up to 824 MB of video directly on the hard drive, and a computer game.

The second in this category was Kodak EZ200, which worked as both digital camera and Web cam. Although it did not give good results in indoor photographs with poor light conditions, the outdoor photographs were of good quality at 640x480 pixels.




**Sony DCS-P1:** Good all-round performance




**Intel Pocket PC camera:** Truly worth it

If you are looking at a camera that gives good quality output at a reasonable price, then what you should seek is the Kodak DC-3400. Amongst the cameras with lower resolution the Intel is the best buy as the camera can work as a digital camera and Web cam, record video and all this under Rs 10,000.

1 col AD

# IN TEST: 34 SPEAKERS FOR PC



Find it on digit interactive

**More Info** on the test process and the products tested, check out **Mindware**

**Photograph:** Ashesh Shah



# A Sound Decision

Deciding the right speaker system for you might prove a tricky task. Let us help you make the right choice—one that would be music to your ears and your pocket

MENLYN NORONHA

Have you always wanted to experience sound that is superlatively clear, that gives you a theatre-like immersive experience, without trooping to the theatre or spending a fortune? Then a speaker set for your PC might be the answer for you. Your computer is not merely a tool for speeding up your work. C'mon admit it, you do listen to the latest numbers, play *Quake*, and watch action flicks on your computer. So don't you think you deserve the best sound system at a price you can afford? So take your pick from a range of speakers—from the conventional two-speaker stereo models, to speakers that offer you the Dolby Digital/Pro Logic decoder.

## Overview

Almost all high-quality musical programmes, be it music, movies or games available today are either recorded in stereo or recorded on more than two channels and mixed down to stereo for distribution on compact disks. Given that the object of a high-end audio playback system is to reproduce the original performance as closely as possible, it is obvious that providing surround capability would further that goal.

In a live performance, sound arrives from all directions, creating a sense of envelopment and clueing the audience into the unique acoustics of the performance space. Stereo playback can only offer a thin slice of these qualities. The difference signal between the left and right channels can be used to recover ambience information from stereo recordings. This L-R signal, often called the surround signal, is also used to drive a pair of speakers located behind the listening area. For home audio systems this type of environment can be created only by using a DVD player that

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comes with the embedded 5.1 channels or by using 5.1-compatible soundcards. To satisfy these criteria we used the best 5.1-compatible soundcard, Creative Sound Blaster Live!

For the purpose of the test, we differentiated between the basic two-speaker setup (with or without external subwoofers) and surround speakers (4.1, 5.1 and higher speaker setups). It wouldn't make sense in pitching a lower end two-speaker setup with the higher surround speaker sets. You will find, on occasion, in the review that some four-speaker setups are significantly cheaper than some high-end two-speaker sets. In such cases it would always be preferable to go in for the four-speaker combinations (depending on your current soundcard and the room dynamics). What must be clearly understood is that, as with most things related to a PC, audio solutions too are interdependent. You may buy an excellent speaker set but if you miss out on the right soundcard then you will be compromising on the quality that your expensive speakers could have provided.

## Two-speaker setups

Here we concentrated on speaker sets that come in the basic two-speaker models or the better 2.1 (two satellites and one woofer) models. This category covers the lower end of the market segment. The variety of sets available in this category is quite large and most of us end up getting these speaker sets along with our new PCs. Mercury had a strong presence in this segment with varied models. Typhoon has some very aggressively priced speaker sets in this category. A good development is the presence of Indian manufacturers such as Sumoko competing along with the heavyweights such as Creative, Samsung and Lexpro. The price spectrum ranges from Rs 375 to Rs 8,900.

### Quality

In terms of quality of sound reproduced, **Typhoon Silver Crest 600** came out tops. The Typhoon Silver Crest gave decent audio quality while watching movies and offered excellent stereo effect. It also generated good quality treble and vocals. The quality of bass generated was average with slight distortion when we played music that had deep bass.

But the level at which the distortion occurs is tolerable as compared to the distortion generated by the Lexpro LS 880 or even the Typhoon DS 1032.

## TEST PROCESS

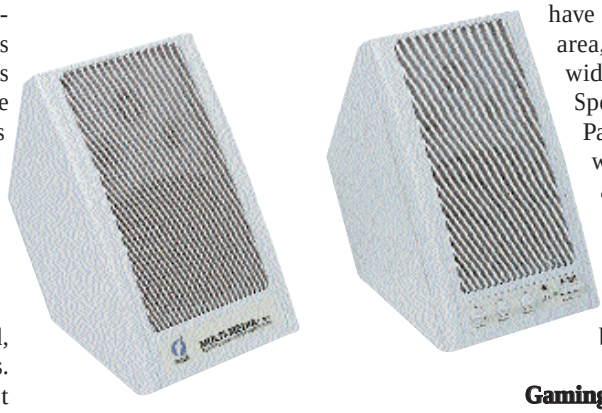
The test system used to evaluate the speakers consisted of a Celeron 666-based computer with 128 MB SDRAM. The most important element of this configuration is the Sound Blaster Live! Platinum audio card used to test the speakers.

We tested the speakers using a carefully compiled collection of 36 audio tracks that cover the entire audio frequency range. The tracks used were made without any kind of electronic processing. They also contained subtle transients that define true hi-fidelity, which are sometimes lost in the reverberation and processing used in making conventional records. These tracks can not only test the performance of a wide range of sound equipment but also offer the very best in musical, vocal and effects sources for experimental and demonstration purposes. The speakers were also examined by means of their performance during gaming sessions; we included the two most popular games—Quake III and Unreal Tournament.

As speakers are also used while watching movies, to determine the quality of sound that the products would deliver, we used a series of clips that we judged could bring out the best or the worst in such a scenario. The clips included scenes from some popular movies. Again, care was taken that the test setup was arranged in a manner so as to prevent any of the characteristics of the room itself from interfering with the inherent characteristics of the speakers.

The runner up in this section was the Creative PC Works 2.1 that just marginally lost to the Typhoon SC 600 and was able to leave the Samsung SMS 8320 behind with a very comfortable margin. The Creative PC Works 2.1 did well in the treble and mid (vocals) frequency section and performed better with games and movies. However, while playing a sample that contained very low frequency, the reproduction was not satisfactory.

Unlike other stereo speakers wherein manufactures have a single full way speaker, the Samsung SMS 8320 has a separate tweeter and a woofer that helps in delivering more clarity in sound. Innovatively designed, this speaker set was able to produce the right amount of treble and mid frequencies, but its performance in the bass section was nothing to write home about.



Funai 788: Big bodied, with decent bass and mid-frequency response

The Mercury SW480 was one of the cheapest and best-looking 2.1 speaker systems that we received. It is not high powered like the speaker systems mentioned earlier, but has the capability to deliver quality at those lower volumes.

The stereo section saw some entries that sported the NXT flat panel technology. NXT has developed a speaker system that comprises a flat panel. It has called this technology SurfaceSound. Unlike conventional speaker systems where the radiation of sound is very focussed (and you have a 'sweet spot') in your listening area, SurfaceSound provides a much wider audio listening angle. The Jazz Speaker Malibu and the Frontech Flat Panel, were two such speakers. They were able to reproduce good highs and mid frequencies but completely lacked the ability to produce bass. The bass actually sounded as if someone was trying to drum up a cardboard box.

### Gaming

In the gaming section again, the **Typhoon Silver Crest 600** took away the laurels. There is ample power in this speaker system to suffice the needs of a high-end gamer. The speakers are capable of providing the perfect ambience required for playing games, with all those high pitched shrieks that your opponents make when you frag them in *Quake III*. Even the quality of bass is exceptionally good.

Optionally, at a lesser price range you have the Creative PC Works 2.1, the Samsung SMS 8320 or again the Typhoon Silver Crest 400. These systems manage to deliver the right punch and flavours that can engross any gamer in those fierce *Unreal Tournament*.

The Samsung, although less powerful, delivers ample amount of sound effects required to play high-end multiplayer games. However, in terms of power the Lexpro LS880 can be graded as more powerful than the Samsung, but here the quality of the sound delivered is bad. There is a lot of jarring and distortion audible in Lexpro LS880, especially while playing *Quake III Arena*, but this was considerably less while playing *Unreal Tournament*.

### Music

In this field, the **Samsung SMS 8230** took the overall lead with its clarity in vocals and the perfect treble response. It was able to maintain the overall quality of bass reproduction. The speaker that came second was the Typhoon Silver Crest 400 and it did quite well too, but lagged behind in bass reproduction. Next in line was Creative PC Works. It lacked the overall clarity that was found in the Samsung SMS 8230, but the set had exceptional bass reproduction.

The Funai-788 was no stranger to music and was capable enough to deliver good quality sound with decent bass and mid response. The only problem that was found here was in the treble, which was too loud and at certain points where there is a mish mash of frequencies, a bit of distortion was noticed. But otherwise it would definitely qualify for music playback.

## PMPO Vs RMS

When you go in to buy a speaker or a music system, one thing you must look out for is the output (power) of the product. Power rating in the sound industry is measured using two different terminologies—PMPO (Peak Music Power Output) and RMS (Root Mean Square Power). This displays the different rating systems that are in use for obtaining the output capacity of a specific speaker or amplifier. A common misapprehension is that higher the PMPO rating of the speaker, the better the output and quality of the speaker or system as a whole. Actually, it's the RMS rating that determines quality and higher the RMS rating, better the speakers.

What do PMPO and RMS refer to? PMPO refers to the maximum amount of power that the speaker or the amplifier can deliver at its peak. A PMPO rating is not necessarily indicative of the performance of a speaker throughout a wide frequency range. An RMS power value is the actual music power output of a speaker. It is a true indication of the output power of a given speaker and its ability to generate sounds having frequencies throughout a wider range.

The continuous output is a better indicator of power and this is what you should look for when comparing speaker systems. So the general rule adopted by serious music lovers and audiophiles is that higher the true RMS rating of a speaker, higher is its actual power or volume output. Remember the rule, 'Greater the RMS rating, better the speakers'.

### Surround speakers

Here, we concentrated on speaker systems that offer surround sound and this included the 4.1 and the 5.1 sets. Surround sound refers to the use of multiple channels to envelop the movie-watching or music-listening audience, making them feel like they're in the middle of the action or concert. True surround sound algorithms rely on dedicated speakers that physically surround the audience. There is one centre speaker, which carries most of the dialogue and part of the soundtrack. There are left and right front speakers that carry most of the soundtrack and may carry parts of the dialogue. Then there is a pair of surround sound speakers that is placed to the side of the audience to provide the surround sound effect. Finally, a subwoofer can be used to reproduce the low frequency bass effect.

In this category, we received seven different brands of speakers. Creative has always had a major presence in this segment, but lately there have been quite a few other manufactures such as Logitech who are giving Creative some serious competition. Special mention must be made of Jetway, which has produced the small wonder called Artis. And its pricing is aggressive too. Others like Frontech have also made a significant splash in this segment.

### Quality

In terms of surround quality, the speaker that emerges as the best is the **Creative Cambridge SoundWorks DTT2500** that acquired the highest scores in the quality section. Here the best part was the setup that we received—a Dolby Digital decoder that allows you to enjoy stunning DVD audio without purchasing an expensive Dolby Digital system. The decoder is equipped with Dolby 5.1-channel that pumps sound into the front left, front ➜

## Headphones or Earphones?

Earphones? They are uncomfortable to wear, sound tinny and they harm your ears. If you have ever bought a portable audio device, it probably came with this pain in the ear. Cheap earphones aren't even remotely suited for playing music or any kind of hi fidelity audio. Do you want deeper bass, crisper highs, clear mid tones? Then consider buying a good pair of headphones. They come in a wide variety, starting from simple, cheap Rs 50 headsets to the swank looking Philips headphones that are sold for around Rs 700. The latter offers a higher degree of comfort with its foam ear pads and adjustable headrests, and offers nice bass and mid tones. Though not the perfect set, it's enough to satisfy most regular audio lovers.

But if you're a real audio freak and nothing less than the very best can satisfy you, then brands such as Sennheiser, Koss or AKG low-end headphones may be what you should opt for. These headphones cost in the range of Rs 1,500 to Rs 4,000. If you are wondering why we said low-end, the reason is simple. Your PC just isn't capable of driving high-end headphones. You would need something called a headphone amplifier to drive the likes of the Rs 5,000 to Rs 20,000 headphones that are nothing less than 'super phones' when it comes to quality and reproduction accuracy. And they are loud enough for DJs who use them in environments full of noise, and still manage to hear that fine skip or beat that helps them synch their own mixes.

## Soundcard: The Hidden Performer

A great deal depends on this rather neglected piece of hardware. Mostly it is the soundcard that is to blame for poor signal quality. Contrary to popular belief, a soundcard consumes resources too. More importantly, if you are going for a two-speaker setup (all of the two-speaker sets reviewed here had built-in amplifiers) then Creative Vibra 128 is the soundcard to go for. This soundcard is relatively inexpensive and although earlier it was bundled along with the multimedia kits from Creative, it is now separately available in the market for about Rs 1,200.

If you are planning to go in for the 4.1/5.1 speaker sets, then you need a soundcard that supports discrete channels (front and rear). A good choice would be the Creative SoundBlaster Live! series that has support for four-point surround speaker sets and also includes several other features. There are three versions of the Sound Blaster Live!—Sound Blaster Live! Value, the SB Live! Platinum and the Sound Blaster Live! Platinum 5.1 (which now supports Dolby digital decoding).

The Sound Blaster Live! Value is one of the most popular soundcards in the market. It is especially known for its quality and also the minimal system CPU utilisation (less than 3 per cent). As a matter of fact, it uses the same core DSP (Digital Signal Processor) chipset (EMU10K1) which the other expensive versions of this card use. The SoundBlaster Live! Value is reasonably priced at Rs 3,400, whereas the Platinum and the Platinum 5.1, which include professional tools such as the Live! drive are priced Rs 13,000. These fit in any empty bay on your cabinet on the front and furthers connectivity to various auxiliary devices.

However, there are other cheaper surround capable soundcards available. If you are not bothered about system CPU utilisation and an extensive software bundle, you can turn to soundcards that run using the CMI 8738 chipsets. Yamaha and Lancer have created their versions of the four-point surround cards using the CMI 8738 chipsets. However, the CPU utilisation is much higher than the SB Live! Series.

Aureal had created the Aureal Vortex and Vortex 2 Quad. But the firm being extinct, you will be lucky to find any of their cards.

right, centre, rear right, rear left, and a subwoofer that is capable of generating pure distortion-free bass. The 20 Watt RMS subwoofer, though low powered as compared to the Logitech Xtrusio DSR 100 which is equipped with a 52 Watt RMS subwoofer, delivered exceptional quality.

The Logitech DSR 100 took the second spot. This set has the most powerful subwoofer. Here we were able to get the best in the bass section with the heavy 52 Watt RMS bass. The letdown however was its satellites—they distort at high volumes.

The third player was the Jetway Artis 1200 Watt that had a good subwoofer (not as powerful as the Logitech) and satellites. The only flaw that we found here was the jarring/distortion of the front satellites at peak volumes. This could be the problem with the inbuilt amplifier that wasn't capable of stabilising the output to the front speakers.

The speaker that did the worst was the Turando FP2000 that sported the best looks and was the only flat panel 5.1 systems that we received. The looks, however, didn't match its performance. There was a lot of distortion audible from the satellite.

### Gaming

In gaming, the speaker that came out a clear winner was the **Logitech Xtrusio DSR 100**. The speaker, with its low frequency generating subwoofer, can make you actually feel the vibrations. It is followed by the Creative DTT2500 and the Frontech 5D-103 that with their respective systems did an amazing job. The only place where these speakers let us down was in bass reproduction where there was a significant lack of punch. Otherwise, any of these speakers would be a very good buy if you are interested in an enjoyable gaming experience.

Turando FP2000 was a disappointment once again—it delivered poor quality bass and very loud treble in *Unreal* and delivered a lot of distortion. While playing *Quake III Arena*, it delivered loud and screechy treble and mid frequency.

The Creative FPS 1000, the Jetway Artis and the Typhoon DS 1034 didn't perform badly but weren't impressive in any way either.

These speakers were capable of delivering an acceptable quality of sound while playing games. But they were not as good as the Logitech DSR 100 that tempted us to go on for another round of frags in *Quake III*.



Logitech DSR100: A home theatre system with powerfull bass

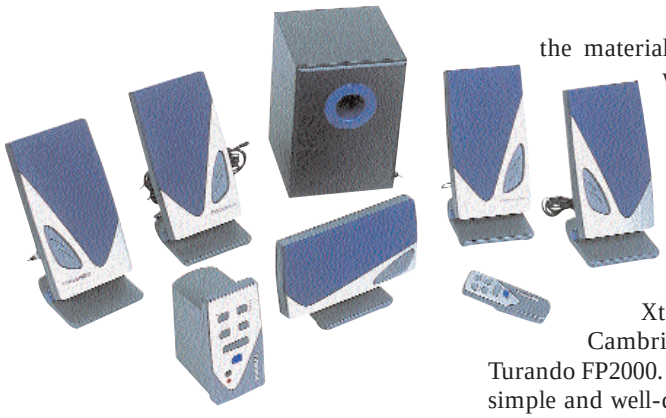
### Music

For the best musical experience, check out the **Creative DTT2500** that delivered the best quality music without any distortion. The treble, mid and bass frequencies were balanced and well maintained.

In contrast to this, the Turando FP2000, like in the other tests, fared disappointingly here too with too much distortion. This distortion was mostly generated from the satellites due to the fact that these satellites were giving out bass, which is not good for any system.

The speakers that came close to the performance churned out by the Creative DTT2500 were the Logitech Xtrusio DSR 100 and the Creative FPS 1000. These systems delivered good quality music but lost points with respect to sharpness in the mid frequency range. The Creative FPS 1000 generated an excusable amount of distortion and the Logitech delivered a lower quantity of mid frequencies but was definitely good at delivering even the lowest of frequencies. The Logitech Xtrusio is the right choice if you are interested in a PC sound system that can deliver good music quality.

The Typhoon DS1034, the Jetway Artis and the Frontech 5D-103 were capable of delivering an acceptable quality of music that will do well if you are not obsessed with getting perfect quality.



Tornado FP2000: Suffers from too much distortion in sound

### Surround sound

The speaker that excelled in terms of surround sound was the **Logitech DSR 100.** The punch and clarity of sound that it displayed would keep anybody glued to the movie being played. The surround effect that this speaker system delivers was noteworthy and even the ripped sample files from the DVD (VOB files) that we ran sounded crystal clear. Small creaks and even the sound of the smallest twig cracking under someone's feet were audible.

The Creative DTT2500 comes in a close second. Clarity and depth were some of its prominent features. But the experience that we felt while using the Logitech Xtrusio DSR 100 was definitely missing. However, the surround effect received here was not substantially lesser than the Logitech.

The speaker that came quite close to the Creative DTT2500 was another of Creative's entries, the Creative FPS 1000. This one too, like the DTT2500, sounded complete, but for some distortion that was audible in scenes carrying high pitched sounds. These speaker sets are followed by the Jetway Artis, followed by the Frontech 5D-103 that did well in the surround sound category but lacked the qualities required by a speaker set that would glue movie watchers to their seats. Again, Turando FP2000 fared poorly. The surround effect felt here was good and was comparable to that delivered by the Frontech, but the amount of distortion and cracking heard would easily disturb.

### Features and build quality

Features, with regard to speaker systems, mean the number of controls present, accessibility to the controls, type of input (analog or digital), number of speakers used, presence of a remote control, etc. Under build quality, we checked out the type of material used to build the speaker, the material used for the cabinet, whether the body vibrates while the speaker is in use, etc.

Starting off with technology, the only speaker sets that supported digital input were the Logitech Xtrusio DSR 100, the Cambridge DTT2500 and the Turando FP2000. The first two came with simple and well-defined connectors that were easy to attach. The Turando FP2000 came with the cables all right, but the main digital input cable seemed quite confusing and it took us a long time figuring out which cable goes where. The cables from the speakers had to be connected to a separate console that had controls to the entire system and an additional wireless remote was also provided to make things easier.

The Logitech Xtrusio came with controls on the subwoofer and a mouse-shaped wired remote control that makes life smooth as far as speakers are concerned. But it was the **Creative Cambridge SoundWorks DTT2500** that stole the show. It is a true digital 5.1 speaker system, equipped as it is with a separate Dolby Digital decoder that allows you to enjoy some stunning DVD audio without purchasing an expensive Dolby Digital system. The only speaker mounting stands that came were those for the rear speakers of Creative's DTT2500 and FPS1000 that helped placing the rear speaker at ear level. This placement enhances the listening experience.

The most innovatively designed speakers were the Turando FP2000. The system was the most jazzy looking flat panel 5.1. Next in line is the Samsung SMS 8320 that sported a cool cone shape. The grille on the Sumoku Logic 2 was a metallic one and not of the usual fabric, but it constantly generated vibrations that actually cost the set a lot in terms of grades as it effected the overall quality of the sound.

The Sumoku Alpha 2 is a good pair to lay your hands on, but its finish left much to be desired. The Logitech DSR had a black dustbin-shaped subwoofer—a break from all those boxy looking subwoofers. The colourful flat panels from Frontech and Jazz Speakers could be the right accessories to add a dash of style to your computer. The worst build quality was seen in the Lexpro LS880. When set to play at high volumes, it started shedding its control buttons.

## Types of Speaker Drivers

A speaker is a device that accepts audio signals from a receiver or amplifier and converts them into sound waves. With the availability of different speakers that cover a different range of frequencies, it is necessary for you to understand what you can expect from the type of speaker that you plan to buy. Generally, speakers are divided into three categories—tweeter, mid range and bass.

**Tweeter:** When a drummer hits the cymbals in his drum set, the high-pitched shrill noise that you hear is produced by this speaker. Unlike the other speakers, the tweeter doesn't have to be large in size and generates frequencies from the upper audio frequency spectrum (from 2,000 Hz or 3,000 Hz to 20,000 Hz).

**Mid-range speakers:** These mainly focus on the vocals and other sounds from different musical instruments. These speakers lie between the bass and treble range in the audio frequency spectrum. These frequencies work from between 150 or 200 Hz to 3,000 Hz. As these speakers cover almost the entire range in the audio frequency spectrum, speaker manufactures generally tend to drive up the power of these speakers and sell them as full range speakers. Full range drivers provide a more consistent sound field than conventional speakers that rely on woofers, tweeters and crossovers.

**Woofers:** The deep punchy sound that one feels when a drummer is playing his set is the bass that is generated by the woofer. They are designed to reproduce only low bass frequencies. A powered subwoofer contains an amplifier and an electronic crossover that helps filter only the lower frequencies that the sub is supposed to handle. These are always the largest speakers seen in a sound setup and for the home segment, they are still the large boxy looking speakers that have to be placed on the floor near any corner of the room. The woofer or the subs as they are generally called, work at the lowest frequency range of the audio spectrum from 20 Hz to 150 or 200 Hz.

SCORE BOARD

# Specifications

## Speaking about Speakers

| Model | Dealer | PHONE | Price | E-mail | Specifications | | | Performance Benchmarks | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | No of Speakers | Digital/ Analog | Sub Woofer | Quality (Out of 50) | Gaming (Out of 20) | Music (Out of 15) | Stereo/ Surround (Out of 15) | Total | Rating |
| 2-Speaker sets | | | | | | | | | | | | | B- |
| A4 Tech Sound Star AS-7 | Selathaar Industry | 044-8252275 | Rs 375 | marketing@maple.co.in | 2 | Analog | No | 32.81 | 7.5 | 9.38 | 2.1 | 51.79 | B- |
| A4 Tech Sound Star AS-9 | Selathaar Industry | 044-8252275 | Rs 475 | marketing@maple.co.in | 2 | Analog | No | 32.29 | 7.5 | 6.56 | 2.4 | 48.75 | B+ |
| Creative PC Works 2.1 | Express Computers | 022-3852070 | Rs 3500 | NA | 3 | Analog | Yes | 40.63 | 12.5 | 9.38 | 3.9 | 66.41 | B- |
| Frontech Flat Panel Speakers | Mnemonics Systems | 022-8010871 | Rs 1,400 | mnemonics@vsnl.com | 2 | Analog | No | 30.73 | 7.5 | 5.63 | 2.1 | 45.96 | B |
| Frontech Multimedia Speakers | Jupiter Infosys | 022-2001211 | Rs 435 | frontech@bom5.vsnl.net.in | 2 | Analog | No | 34.9 | 8.75 | 5.63 | 2.1 | 51.38 | B+ |
| Funai F-788 | Micro Masters | 022-3885097 | Rs 1500 | micromasters@vsnl.com | 2 | Analog | No | 38.02 | 11.25 | 9.38 | 3.9 | 62.55 | B |
| Hunjan 3DH-202 | Micro Masters | 022-3880597 | Rs 375 | micromasters@vsnl.com | 2 | Analog | No | 34.9 | 10 | 7.5 | 2.7 | 55.1 | B |
| Jazz Malibu Flat Panel | Priya India | 022-2663611 | Rs 1000 | prom@priyagroup.com | 2 | Analog | No | 29.69 | 6.25 | 6.56 | 2.1 | 44.6 | B |
| Jazz Speakers J1104 | Priya India | 022-2663611 | Rs 450 | prom@priyagroup.com | 2 | Analog | No | 32.29 | 7.5 | 6.56 | 2.4 | 48.75 | B |
| Jazz Speakers J3504 | Priya India | 022-2663611 | Rs 725 | prom@priyagroup.com | 2 | Analog | No | 36.46 | 8.75 | 10.31 | 2.7 | 58.22 | B |
| Lexpro LS 880 | Kunhar Peripherals | 022-3863252 | Rs 3000 | salesbom@kunhar.com | 3 | Analog | Yes | 40.63 | 11.25 | 7.5 | 2.7 | 62.08 | B+ |
| Mercury SW 480 | Savex Computers | 022-2881616 | Rs 900 | savex@vsnl.com | 3 | Analog | Yes | 37.5 | 10 | 8.44 | 3.6 | 59.54 | B- |
| Mercury MS 340 | Mnemonics Systems | 022-8010871 | Rs 425 | mnemonics@vsnl.com | 2 | Analog | No | 34.38 | 7.5 | 8.44 | 2.1 | 52.42 | B- |
| Mercury MS 360 | Savex Computers | 022-2881616 | Rs 450 | savex@vsnl.com | 2 | Analog | No | 31.77 | 10 | 5.63 | 2.1 | 49.5 | B |
| Microtek Explore Boss VX 880 | Microtek International | 011-5967341 | Rs 990 | microtek@del2.vsnl.net.in | 2 | Analog | No | 36.46 | 12.5 | 5.63 | 2.7 | 57.29 | B |
| Microtek Xplore Josh VX 820 | Priya India | 022-2663611 | Rs 690 | prom@priyagroup.com | 2 | Analog | No | 36.98 | 11.25 | 8.44 | 2.7 | 59.37 | B |
| Microtek Xplore Joy VX 460 | Priya India | 022-2663611 | Rs 490 | prom@priyagroup.com | 2 | Analog | No | 33.33 | 8.75 | 8.44 | 2.1 | 52.62 | B |
| Samsung SMS 7640 | Micro Masters | 022-3880597 | Rs 1200 | micromasters@vsnl.com | 2 | Analog | No | 36.98 | 11.25 | 8.44 | 3.3 | 59.97 | B |
| Samsung SMS 8320 | Mnemonics Systems | 022-8010871 | Rs 2000 | mnemonics@vsnl.com | 2 | Analog | No | 39.58 | 12.5 | 10.31 | 3.3 | 65.69 | B |
| Sumoku Alpha 2 | Palesha Electronics | 9520-6350996 | Rs 1250 | npalesha@csnl.com | 2 | Analog | No | 34.38 | 10 | 7.5 | 3.3 | 55.18 | B- |
| Sumoku Logic 2 | Palesha Electronics | 9520-6350996 | Rs 1050 | npalesha@csnl.com | 2 | Analog | No | 34.9 | 10 | 8.44 | 1.8 | 55.14 | B |
| Sumoku Logic 3 | Palesha Electronics | 9520-6350996 | Rs 1650 | npalesha@csnl.com | 2 | Analog | No | 35.42 | 11.25 | 6.56 | 3 | 56.23 | B |
| Typhoon Design Speakers DS1032 | Hitech Computers | 022-4914642 | Rs 4724 | bom@hitechit.com | 3 | Analog | Yes | 39.58 | 12.5 | 9.38 | 3.6 | 65.06 | B- |
| Typhoon Easylite | Hitech Computers | 022-4914642 | Rs 700 | bom@hitechit.com | 2 | Analog | No | 32.81 | 8.75 | 5.63 | 1.8 | 48.99 | B+ |
| Typhoon Silver Crest 400 | Hitech Computers | 022-4914642 | Rs 4600 | bom@hitechit.com | 3 | Analog | Yes | 39.58 | 12.5 | 9.38 | 3.6 | 65.06 | B+ |
| Typhoon Silvercrest Flat Panel SC600 | Hitech Computers | 022-4914642 | Rs 8,900 | bom@hitechit.com | 3 | Analog | Yes | 41.15 | 13.75 | 8.44 | 3.9 | 67.24 | B- |
| Yahama Amplified Speakers | Micro Masters | 022-3880597 | Rs 500 | micromasters@vsnl.com | 2 | Analog | No | 31.25 | 8.75 | 6.46 | 2.4 | 48.86 | |
| Surround Speakers | | | | | | | | | | | | | B |
| Jetway Artis | Kunhar Peripherals | 022-3863252 | Rs 3800 | salesbom@kunhar.com | 5 | Analog | Yes | 44.27 | 13.75 | 11.25 | 10.7 | 79.97 | A- |
| Logitech Xtrusio DSR 100 | Rashi Peripherals | 022-8260257 | Rs 13000 | ho@rptechindia.com | 5 | Digital | Yes | 44.79 | 16.25 | 12.19 | 12.6 | 85.83 | B |
| Turando FP2000 | Mnemonic Systems | 022-8010871 | Rs 9000 | mnemonics@vsnl.com | 6 | Digital | Yes | 35.42 | 10 | 6.56 | 7.8 | 59.78 | B+ |
| Frontech 5D-103 | Jupiter Infosis | 022-2001211 | Rs 2050 | frontech@bom5.vsnl.net.in | 5 | Analog | Yes | 41.15 | 15 | 10.31 | 9.3 | 75.76 | B+ |
| Creative FPS 1000 | Express Computers | 022-3852070 | Rs 5000 | NA | 5 | Analog | Yes | 42.19 | 13.75 | 12.19 | 12 | 80.13 | A- |
| Creative Cambridge DTT2500 | Express Computers | 022-4913986 | Rs 29,500 | NA | 6 | Digital | Yes | 46.35 | 15 | 13.13 | 12.3 | 86.78 | B+ |
| Typhoon Design Speakers DS 1034 | Hitech Computers | 022-4914642 | Rs 6000 | bom@hitechit.com | 5 | Analog | Yes | 42.19 | 13.75 | 10.31 | 11.3 | 77.55 | |

## Decision Maker

| | | |
|---|---|---|
| Economy (up to Rs 2,500) | 2-Speaker | Mercury SW480 + Artis 738S1 PCI soundcard |
| | Surround | Frontech 5D-103 + Artis 738S1 PCI soundcard |
| Mid-range (Rs 2,500 to Rs 7,500) | 2-Speaker | Samsung SMS8320 + Creative Vibra 128 |
| | Surround | Jetway Artis + Creative SoundBlaster Live! Value |
| Hig-end (Rs 7,500 and more) | 2-Speaker | Typhoon Silver Crest SC600 + Creative SoundBlaster Live! Value |
| | Surround | Logitech Xtrusio DSR 100 + Creative SB Live! Platinum 5.1 |




Live Surround with Creative Cambridge DTT2500




Value environment with Jetway Artis surround




True performance with Typhoon Silver Crest




Samsung SMS 8320 provides Best Value

## Tips & Tricks for Sound

**To get the best sound,**

- The listener and the speakers should form a triangle; without this basic setup you'll never hear good sound staging and imaging.
- The nearer the subwoofers (speakers that produce the low frequency sounds) or the woofers are to walls and corners, the better the bass.
- Listening height affects the overall tonal balance of the speakers. Speakers should be at the same height as your ears.
- Angling the speakers towards the listener affects the tonal balances too, particularly the amount of treble and the vocals.
- The best way of using stereo speakers is by maximising the distance between the two speakers. The greater the distance between the two speakers, better is the stereo effect.

## CONCLUSION

There was a good deal of competition in the two-speaker set segment as compared to the surround speaker segment. In the stereo section, the speaker set that displayed the best performance was the **Typhoon Silver Crest SC600**. This pair, equipped with its well-toned subwoofer, outshone all its competitors.

However, its price, at Rs 8,900, will leave you with second thoughts. In fact, at this price, you can easily buy four Frontech 5D-103 speaker sets!

In the two-speaker setup the value for money award goes to the **Samsung SMS 8320**. Priced at Rs 2,000, it wins over the Creative PC works 2.1 that is priced at Rs 3,500.

In the surround sound section, the overall winner was the **Creative Cambridge DTT2500**. Following closely at its heels was the Logitech Xtrusio DSR100. But the DTT2500 had the advantage of having a separate digital decoder and with its sheer power and quality of sound delivered, it carted away the award for the best surround system around.

The value for money set would definitely be the **Jetway Artis** that, along with power under its hood, also delivers acceptable quality at a price that will not burn a hole in your pocket if you are looking out for a surround sound solution for your home.

IN TEST: 9 SOUND EDITING SOFTWARE



Imaging: Solomon Lewis

# For the love of Mike

Changing the gravel and leather voice of a rock icon to sound like the dulcet tones of an opera singer is as easy as pie with the right sound editing software

YATISH SUVARNA

Audio-editing software have moved on from being plain Jane editing tools to programs that give you acoustic realism. With these powerful tools you can make Limp Bizkit sound like Puff Daddy or even record your own voice and make it sound like that of Placido Domingo. The better ones among the lot currently available not only provide you with the basic tools, but also give you some great plugins, which can be downloaded from the Internet along with tutorials and sound files.

Professionals now have a set of tools, which grant them unparalleled versatility in audio authoring. And looking at the versatility of the products, novices too can edit their music to make it sound close enough to that of the pros. This test examines three important aspects—features, ease of use, performance and price. So check out this review, mix your own song and let your audio system rip!

This test is targeted at the home user who expects reasonably good features, which would be useful for editing audio at that level and still respecting ease of use and the price. The prime focus of these software is therefore going to be the feature set supported and also the ease with which these features can be learnt and implemented.

## Wave Editing software

The applications tested here are primarily used while working with and editing Wave files, as opposed to MIDI audio. In the world of digital audio, Wave files are one of the most commonly used audio formats and form the basis of audio media such as audio CD. This format is used to store digital audio data using a method called PCM (Pulse Code Modulation). When a

## TEST PROCESS

The base system used for testing the software was a Celeron 433 with 64 MB RAM with an Intel i740 display card and Aureal Vortex 2 soundcard. The settings in the system were kept constant for all the software. We examined both categories of audio editing software—Wave editing software and MIDI sequencers. Products in both categories were tested for features, ease of use, performance and value.

While testing the products we looked for features such as multiple soundcard support, ability to rip CDs and integrated CD burning clients, real-time tempo adjustment and audio enhancements. For testing MIDI software, we checked if the software allowed real-time effects and hardware support wherein you could plug in external MIDI controller devices such as synthesisers and keyboards.

Ease of use is another aspect that we checked. Software that allows easy cutting and pasting of parts of files across channels makes editing a lot easier. If it lets you add effects and change parameters such as the track's pitch, tempo, patch (or instrument) values, it contributes to ease of use. Software that offer a concise interface were given extra points. Another point we noted was the online and integrated help.

Under performance we checked for the software's ability to handle large audio tracks and also work in high-quality modes that would enable the overall output of the track to be of controllable and high quality. Finally, we weighed the features and the performance of the various software against their price. Software that were more feature packed and easier to learn and use were awarded more points in this category.

song is to be encoded in Wave file format, it is broken down into small chunks of data that are 'sampled' and processed, wherein a number of bits are used to store the value of the audio wave at that point in time.

Hence, the waveform is sampled many times a second and encoded. CD quality Wave files are, for example, stored using 16-bit samples that are taken 44,100 times per second (or 44.1 KHz). Lower the sampling rate and bit depth, lower is the quality of the audio and smaller is the file. This form of audio encoding does not undergo any form of compression, resulting in huge file sizes.

### Features

The presence of features such as multiple soundcard support, ability to rip CDs and CD burning, real time tempo adjustment and audio enhancements such as equalizer are what set a good sound editing application apart from the run of the mill.

It's a good feature if the software supports many file formats, which means you can import sound files in different formats and also export the file in the format you prefer.

As far as features are concerned, **Sound Forge 5** emerges at the top with its extensive set of features and integrated options for CD ripping and burning. Also interesting is its high encoding quality support and the presets for working with your audio. It has features such as Acoustic Mirroring and Wave Hammer.

The Acoustic Mirror option allows you to simulate different real-life acoustic environments such as water pipe, concert hall, and others. You get to play around with more than 30 audio effects and around 200 presets. Encoding audio in RealMedia format for broadcast over the Internet is possible here. In fact, you get support for audio encoding up to 92 KHz.

Cool Edit 2000 offers you something quite close to what professionals use. It allows you to record your own music and change and modify



Cooledit 2000: Quite feature-rich

its parameters the way you want. For instance, you can add effects such as reverb, flange, echo, etc. This can help you incorporate real-life sound effects and simulate acoustics such as that of a church or in a tunnel. Furthermore, you can amplify sound, add or remove noise or stretch it. You can also change the format of the song file to a plethora of output audio formats—RealMedia, AIF, MP3, etc.

Wavelab too offers interesting features such as 3D Frequency Analysis and Audio Signal Generator. This audio editor includes very interesting plugins and features support for DVD-quality encoding. You can apply effects such as Stereo Echo and even preview it while the file is playing. You can apply hi-fi chorus to a file or boost the bass with the equaliser. It also has some good editing tools such as pitch correction, harmonisation, stretch and pitch shift.

### Ease of use

One should feel comfortable while using any software. The same goes for audio editing software, be it Wave or MIDI. The interface should be easy to work with and executing tasks should be simple. A software that allows easy cutting and pasting of parts of files across channels makes editing a lot easier and work can be completed faster. If the software lets you add effects and literally 'twist' a file in no time, it contributes to

Find it on digit interactive

**More Info** on the test process and the products tested, **Software** related to sound editing, check out **Mindware**

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## Glossary

**Reverb:** This allows you to recreate the space that is sometimes lost with close-mike recording techniques. It may also be used to create effects by placing sounds in spaces where they would normally never be heard. Reverb consists of early reflections, which are the first reflections that arrive back to your ear and the echoes themselves.

**Flange:** Also popularly known as Wah-Wah, this is used to create the sweeping effect often heard in guitar recordings from the 1960s and in the techno sounds of today. Using this effect, you can recreate the sounds that flange, i.e. move in a sweeping manner.

**Multi-tap delay:** This allows you to create complex delay patterns through the use of several discrete delays. Each delay tap has its own delay time, amplitude, and stereo panning controls.

**Resample:** Resampling data changes the number of recorded samples per second. When changing to a higher sample rate, extra samples are interpolated and the file size increases. When changing to a lower sample rate, some samples are removed and the file size decreases.

**Acoustic mirror:** You can use Acoustic Mirror to add the acoustical coloration of real environments and sound-altering devices to existing recordings. In effect, you can simulate responses varying from the acoustics of large concert halls to the sound of vintage microphones.

**Distortion:** This allows you to precisely tailor gain at all input levels of a signal. You can use the Distortion plugin to create dramatic to subtle distortion, simple compression, expansion, and noise gates.

ease of use. Some wave editing software offer you a very visual interface. They provide tools such as 2D and 3D analysis, colour-coded windows, etc, which add a lot to the term 'ease of use'.

Considering ease of use, most of the software we tested offer a simple interface and enhancements that make working with the software easier. Editing with Cool Edit 2000 is a breeze. You can easily cut and paste parts of your song and add a particular effect. Cool Edit lets you cue your songs so that only specified parts are played. This is especially useful if you are going to be adding a vocal track to your song and need only certain parts to be played at given times.

The interface of Sound Forge looks clean and concise and can be easily customised to suit your needs so that you can work faster. The time taken for applying an effect is displayed at the bottom of the screen. If you accidentally switch off the machine or experience a power failure, Sound Forge can restore the file to the previous state without losing any change.

Installing WaveFlow was quick and easy and the graphical interface makes editing quite simple. So, even if you are using the software for the first time, understanding and working with it will be no difficult task. Besides, you have the option of opening multiple windows, and this allows you to get your work done faster.

Goldwave is where you can have user-defined filters and you can even save it for future use. Editing using Goldwave is simple enough even if you are working on audio editing for the first time. The MDI (multiple document interface) allows you to open a number of files at the same time. However, there's no multiple Undo feature, which is a major limitation.

Although the more feature-packed software such as Cool Edit 2000 and Sound Forge 5 make editing a cakewalk, Goldwave with its multiple-window support, is an option that can be considered.

### Performance

Though audio editing software depend heavily on RAM and the CPU more than anything else, it helps if the software performs tasks such as encoding audio and adding effects faster with lesser amount of RAM. To test the performance of the software, we re-sampled a 51 MB wave file and the time taken was noted down. Normally when an effect is applied to a file, it takes a lot of time for the effect to be applied if the size of the file is large (say 50 MB). Now if a user wants to remove the previous effect and add a different one, it gets really painful if the software does not have an Undo feature or if it undoes only up to a couple of levels. A good audio editing software should support the Undo feature up to maximum levels possible, and do it fast.



Wavelab 3: Offers good editing tools

Cool Edit 2000 and Sound Forge 5 come with unlimited Undo levels. Cool Edit was also quick at opening and saving files. However, it took more than a minute to resample a Wave file. Opening a file in Sound Forge took an unusually long time—35 seconds. Waveflow took 11 seconds to open a file. But it was the fastest in the resampling test, where it managed to complete it in just 12 seconds on the 51 MB file.

### Value

Most of these software are Internet based; you have to purchase the software (or download a demo version) from the company's Web site. If you are looking for software that offers you average features, nothing really fancy, at a low price then Goldwave and Waveflow are good choices. If you want loads of features and have high-end audio editing on your mind then Sound Forge 5 and Cool Edit 2000 are options that can be considered by the beginner and the seasoned user as well. These also offer you good support, amazing plugins that allow you to add special effects to your audio file (such as expanding the stereo field or bending the pitch on a song) and make for effortless audio editing. But the winner is definitely **Sound Forge 5** given its advanced editing capabilities and features that make your audio editing task a pleasure.

## MIDI software

The second categorisation of products in this comparison consisted of a variety of audio editing software whose core competency is in handling and sequencing MIDI software. MIDI is an acronym for Musical Instrument Digital Interface. This is a format that stores information on the basis of the tones and sounds of various musical and percussion instruments. These are actually sampled sounds. What MIDI does is send information regarding the pitch, duration and other such parameters of a note to an instrument that can play these instructions. As MIDI tracks are sequences of note instructions, the size of a MIDI file is small. Using this format, musical instruments can also interact with each other. Software called sequencers allow you to record sounds from musical instruments such as synthesisers and keyboards and edit it on a computer.

### Features

Nowadays, MIDI software for home users

## Reason to Create

Reason from Propellorhead Software can without any doubt be termed as fully loaded. This software basically is a software emulation of an electronic music project studio. The software has a mind-blowing interface and you will be amazed with its features. The interface is as intuitive as it can get and the wildest feature about the software probably is that you can literally turn the software around. You can actually see the front and the back of the software by just pressing the tab button, and play around with the wires by actually plugging it out or into any port.




Front view of Reason




Back view of Reason

There are lots of modules such as Digital Sampler, Dr Rex Loop Player, Redrum Drum Computer, Digital Reverb, and Digital Delay Line. All of these offer great effects and help you make great music. But the interesting one of the lot is the Matrix Pattern Sequencer. Through this you can easily program group note triggers, which are repeated. Apart from this there are eight effects processors.

Another neat feature in this software is that you can rename the modules to anything you want. Reason includes a built-in, and extremely intuitive graphical MIDI sequencer, which is capable of recording and editing any real time knob or fader changes you make as your song plays, and these changes can be recorded in real time as your sequence plays. The demo can be downloaded from the official site, www.propellorheads.se.




Drag and drop files with Cubase VST 5

are packed with features normally found only in high-end packages. Take Cakewalk Pro Audio 9 for instance. It supports audio up to 255 tracks and there are two new plugins included in this version, namely Style Enhancer and Sessions Drummer. These are two tidy features that allow the rhythm section (percussions) in the track to sound more natural and not canned. In Cakewalk Pro, styles such as shuffling tempos can automatically be incorporated into the track. Another feature is AudioX that allows soundcard manufacturers to write software so as to make their cards' features available within the sequencer.

Cubase VST 5 is another high-end audio and MIDI editor for professionals wanting to do some quality work. Besides the usual tools, you have the graphic equaliser. It supports 32-bit recording, and frequencies up to 96 KHz, which is equivalent to DAT quality.

Evolution has a Score Edit screen that allows you to view your MIDI information in standard musical notation and this can be edited and printed. Apart from this, there is a drum editor and a piano editor included. This software acts as your MIDI sequencer, thereby allowing you to control any MIDI musical device that's being connected to the PC, be it a soundcard or any external musical instrument. The included SMPTE/MTC support allows for synchronising this software with other external devices and sees to it that they are all running on the same clock and in time. The software even allows you to run a video for a Windows file and synchronise it with your music—ideal for creating soundtracks for video films.

MIDI Maestro 1.9 is yet another application that provides you with good features such as monophonic MIDI to audio transcription tool. It has support for DirectShow-compatible MIDI filters and other visual enhancements, such as the Staff View tool, using which you can draw musical notations and take printouts of it for future reference.

### Ease of use

Apart from the new features, the new version of Cakewalk Pro has a better-looking interface and effects that can be applied in real-time as you are playing the file. It's possible to edit several MIDI files simultaneously in the Piano Roll Editor, and that simplifies matters quite a bit as the Piano Roll easily allows you to create a song by simply dragging and dropping notes onto the view. Even when you open up a song, the different sounds are colour-coded, making it easier to edit. There are other views that Cakewalk allows, such as the Staff View (for people who can read and work with Sheet music). This makes it possible for a wide range of users to use this software—from the novice to the professional.

Cubase too allows you to drag and drop files in the interface and this makes editing MIDI sequences very easy. You can also simultaneously work with 128 channels of audio. But if you are using Cubase for the first time, you might find it a tad difficult to configure the VST plugins and other audio effects. Editing in MIDI Maestro is simple because of the easy-to-use drag and drop object style interface. Using this, you can easily change common track properties such as volume, balance, key, velocity offset and timing offsets of individual notes or groups of notes.

### Performance

Cakewalk Pro carries enhancements such as the Wavepipe technology that reduces the latency or response time of the program. Compared to the previous version of this software, the time taken for a control to respond to a parameter change when mixing a large arrangement can be reduced to around one-tenth of a second

## SCORE BOARD The Music that they Play

| Product | Features | Plugins | File Formats Supported | Web site | File size (MB) | Price ($) | Rating |
|---|---|---|---|---|---|---|---|
| **WAVE** | | | | | | | |
| CoolEdit 2000 | CD recording, File conversion, Touchup function, Audio effects | Tweaking Toys, Phat | mp3, wav, aif, vox, au, voc, txt, svx | www.syntrillium.com | 8.4 | 69 | B+ |
| Goldwave | Independent device control window, Expression evaluator | Pack, Pro Equalizer, Studio Plugin, Audio Cleanup plugin, Direct plugin | wav, aif, mp3, ogg, voc, snd, aif, afc, iff, mat, vox, dwd, smp, sds, txt | www.goldwave.com | 0.8 | 40 | B |
| Sound Forge 5 | Updated user interface, Repair tools, CD burning and ripping | None | wma, wmv, asf, wav, vox, snd, rm, raw, pca, ogg, | www.sonicfoundry.com | 20 | 399 | A- |
| Waveflow | MDI (multiple document interface), Filters, Wavelet denoising | Acoustic Mirror, Wavehammer, xfx1, xfx2, xfx3 | mp3, mov, ivc, dig, avi, au, aif | www.waveflow.com | 1.1 | 25 | B |
| Wavelab | Frequency analysis, Crossfade looper, Support for 24-bit audio files | None | raw, txt, prn, wav, csv | NA | 5.8 | 394 | B- |
| **MIDI** | | | | | | | |
| Cakewalk 9 | Multiple track editing in piano roll, sessions drummer, export to MP3 and real audio | vst, DirectX | wav, aif, au, paf | www.cakewalk.com | 12.8 | 349 | B+ |
| Cubase VST5 | 13 new effects, 32-bit and true-tape recording, Supports 96 KHz recording | vst, DirectX | wrk, bun, wav | www.steinberg.net | 11.6 | 399 | B |
| Evolution Audio | Onscreen keyboard, 256 track support | None | wav, trk, mid | www.evolution.co.uk | 0.8 | 99 | B |
| Midi Maestro | Monophonic MIDI to audio transcription tool, support for direct-show compatible MIDI filters | None | wav | www.midimaestro.com | 8.6 | 99 | B |

with the help of Wavepipe technology, thus allowing you to apply effects to tracks in real time and while the song is playing.

Cakewalk also provides you with support to connect external devices such as synthesisers to mix your own recordings.

If you are looking for software that is reasonably good, that is low-priced and yet has enough features, then you should opt for Evolution. In terms of features, Cakewalk Pro 9 is a good choice because of the plugins and advanced audio effects and editing tools that are incorporated into it. But if you want high-end features and price is no constraint, then you should not settle for anything less than Cakewalk Pro 9 or Cubase VST 5.

### Making Music on your PC

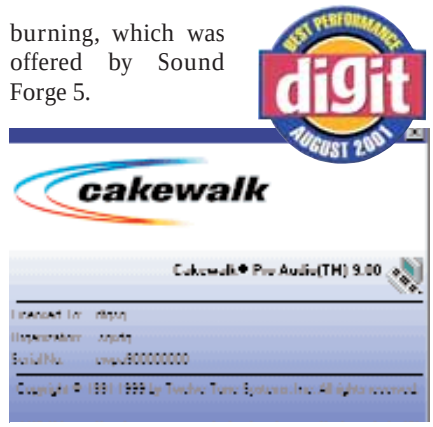
Your MIDI software can be used to make your own music. The setup is quite simple. You should have a soundcard with a MIDI input, a MIDI cable, a mike (if you want to record your own voice), and a MIDI editing software such as Cakewalk. If you want to record musical notes from a synthesizer, all you have to do is connect one end of the y cable to the output port of the synthesizer and the other end to the MIDI input port in the soundcard. If you want to record voice, then the mike should be plugged into the soundcard.

## CONCLUSION

Most of the software that we tested offered good features and new enhancements. But the most impressive among the Wave editing software was **Sound Forge 5**, the winner in this comparison. The software included some great plugins and features that were really useful. The interface too was easy to work with and due to this, editing was a breeze. Cooledit 2000 was very close with loads of enhancements but it missed some useful features such as CD burning, which was offered by Sound Forge 5.



Sound Forge: Your wave file companion

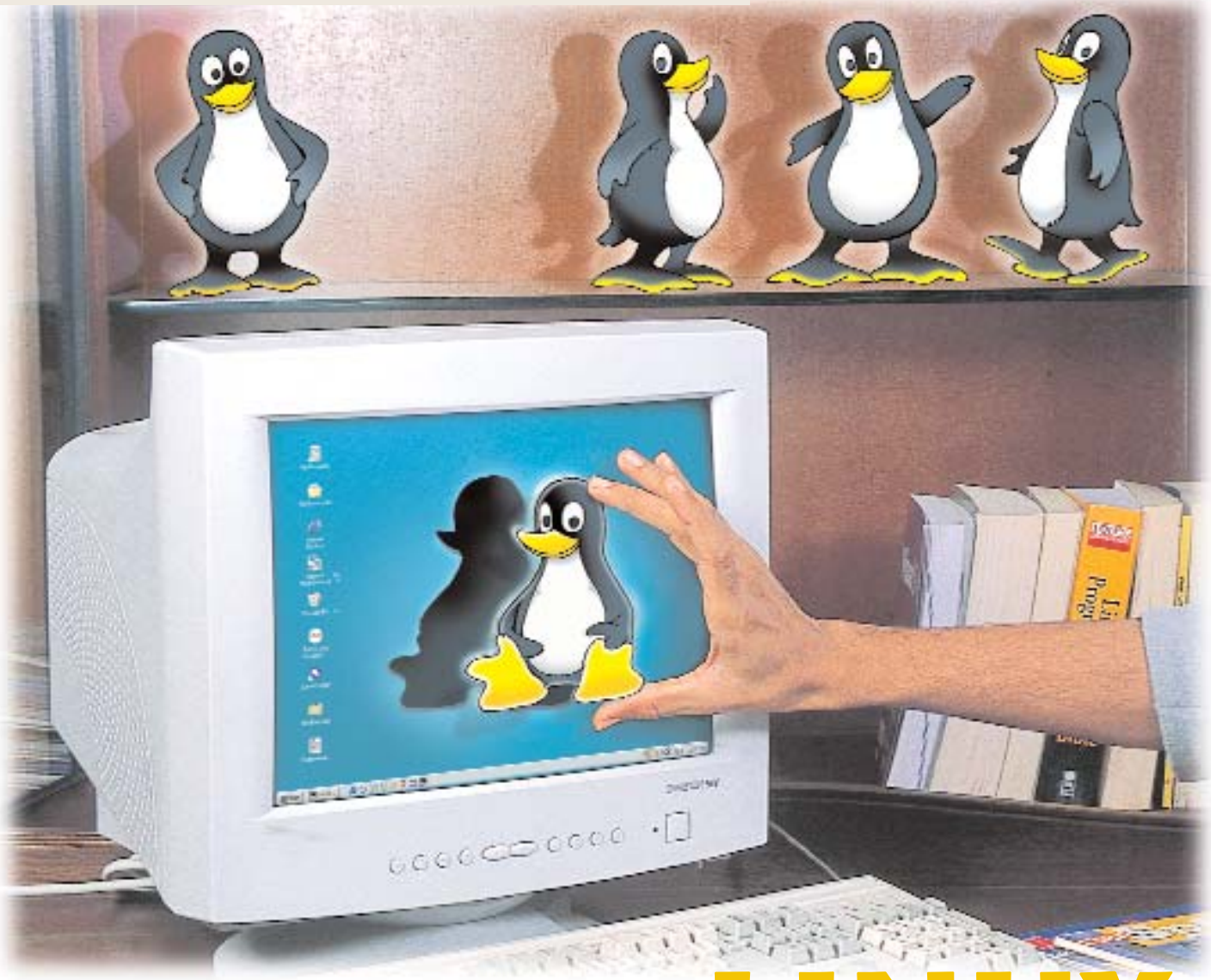


Cakewalk Pro: The right choice for Midi

In the MIDI comparison there were software such as Cubase VST5 that offered great features and almost everything that a user would need for MIDI editing. But **Cakewalk Pro9** is very good choice and proved to be a true winner because of the great features and the ease of use—even novice users will find editing with this a delight.

Ease of use was one area where Cubase was found to be tricky because even though people already working with MIDI softwares will find it amazing due to its features, novice users will have to spend time to get used to the software.

## IN TEST: 7 LINUX DISTRIBUTIONS



Photograph: Jiten Gandhi, Imaging: Mahesh Benkar

# Your flavour of LINUX

**Considering using Linux, but can't decide which distribution is your best bet? Let our Test Centre help you make the decision**

ROSSI FERNANDES

Do you get the creeps each time you hear the name Linux? The installation is tough, it's difficult to use—that's the Linux lore you must have heard. But take heart, the bad days have gone and Linux is gradually moving into the home user market.

There are firms such as Dell that are actually selling PCs with Linux preinstalled on them. Linux was a little difficult to use some years back due to the absence of a graphical interface installation and a not-so-easy partitioning process where you could go wrong and delete some Windows partition and lose data. But the picture is different with the introduction of graphical installation methods adopted by distributions such as RedHat.

Distributions are packages that use the open source Linux kernel and give you a lot of software bundled along with the main Linux operating system itself. This also means installation methods, customisation and hardware support that may have been added by the company that has made the distribution.

Latest updates are important factors as they contain better hardware support, with bugs fixed. More significantly, Linux is open source. But why should you go for a distribution from the market when you can simply download a whole CD or two from the Net with most of the

## TEST PROCESS

In all, we looked at seven major, widely available, Linux distributions, that are also quiet popular amongst users the world over. All the distributions were installed on an Intel Celeron 433 with 128 MB PC 100 SDRAM. The monitor was a Samsung 55V which can give a resolution of 1024x768, but only at 60 Hz. The hard drive was a Seagate 20 GB. A Creative 48x CD drive was used for installing the Linux distributions. An S3 Trio graphics card powered the display. The network card was a 10/100 Mbps D-Link 538 TX. The specific parameters that we looked at were

**1. Installation features and ease of installation:** This is an aspect that usually puts off a person from using Linux. We checked for an in-built disk partitioning tool and also features such as auto partitioning. Options to upgrade the installation and various modes of installation were also noted. We also checked for a boot manager and the various options offered.

**2. Hardware Troubleshooting:** We checked the hardware detection capabilities as well as options to configure the hardware to its optimum settings.

**3. Applications:** We specifically checked for the presence of office suites, imaging tools and viewers, movie players and other Internet accessing tools. Games and entertainment packages were also looked at, as also printing tools.

**4. Integration:** An important consideration was the integration of all the applications with the distribution's GUI.

**5. Miscellaneous features:** There were other standalone features that were present only with some distributions, for instance, system administration tools that allow you to create users and groups or File Managers.

We also looked at how the distribution helped in installing new software, the documentation provided with the distribution, the version of the kernel as also the desktop environment that was provided. The latest version of the Linux kernel that you can get for download right now is 2.4.6.

Finally, the various checks come down to four main points: Ease of Use, Integrity, Features and Value.

Find it on digit interactive

**More Info** on the test process and the products tested, check out **Mindware**

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packages? True, the complete Linux distribution that you download from the Net is the real thing, but it comes minus the documentation, extra commercial packages and support, not to mention the fact that it would take forever to download them over a dial-up connection. These are goodies you do not usually get with distributions downloaded from the Net.

### Easy as pie

The biggest hurdle for most desktop users in using Linux has been the installation. Most users get confused by terms such as fdisk, partitions, swap, etc, which are very basic and essential tools for installing a Linux distribution. Hence, it adds to the value of a Linux distribution if it has a simple installation process—especially for people who don't understand these complex terms—and still provides the option of going to the advanced mode and tweak it for better performance.

**SuSE Linux** was one of the most user-friendly Linux distributions we tested when it came to installation. The interface is designed such that you can access context-sensitive help from the menu on the left with ease. Most Linux distributions come with a whole lot of third-party tools and applications that are bundled along with the main distribution in different CDs; navigating and find out these installations can be quite tiresome. SuSE was really helpful on this count, in that it included most such packages in the main setup itself, so you don't need to go hunting for that small program on the third CD of that particular distribution.

Upgrading SuSE is very easy as online upgrading tools are available that automatically find out the latest versions of the packages installed on your machine and provide you with an option to upgrade them with a simple click.




Corel Linux: User friendly, but has an outdated KDE and kernel

Editing partitions can be confusing if you are a complete newbie to tools like fdisk. In both RedHat and SuSE, the installation procedure and style is more or less the same as their earlier versions wherein you can edit the partitions using a simple GUI with elaborate instructions on the left-hand side of the screen.

There's another option that lets the distribution take over the partition-creating process, and creates the optimal partitions all by itself. But this is recommended

only to those people who want nothing but Linux on that particular hard drive.

In RedHat, the various modes of installation aren't too well categorised. It allows you to install a workstation style, server style or development style, which leaves no space for any normal or home user distribution. However, you may have to do a custom install and choose the packages you need most. Like SuSE, RedHat also allows you to choose to boot into X when you boot up into Linux.

Mandrake is another distribution like RedHat. As in RedHat, the partition had to be created manually. Mandrake has two main modes of installation: Recommended and Expert.

We also came across some really bad installation interfaces and styles, which we would not recommend for home users. Storm Linux has a custom-based installation mode in which categories and packages have to be chosen manually. This is good for the advanced Linux user.

Turbo Linux had a completely ncurses-based installation style with no X running during the installation. ncurses is a text-mode colour display system like DOS's Ansi colour graphics. This allows you to install the distribution using only the keyboard.

The boot manager is one of the main features of a Linux distribution as this is the tool that allows you to switch or dual-boot between Linux and other operating systems. We therefore checked for a boot manager and the various options offered. All of the distributions installed their boot managers well. SuSE, RedHat and Mandrake have good colourful interfaces for the boot loaders. Corel Linux Second Edition is also very user friendly when it comes to installation, but we had some trouble installing the boot loader. Turbo Linux has a completely plain text-based LILO prompt. Overall, installation ease hasn't changed much from earlier versions though the interface has changed in most of the top distributions. SuSE and Mandrake are currently distributions that can be installed easily or without much trouble.



Mandrake: Trying to forge an identity of its own

**Hardware troubleshooting**

Detection of hardware has been an issue with Linux in the past, and is another factor that has hampered its wider adoption.

After doing all the tests in hardware detection, we found that all the distributions with the latest kernels and applications were able to detect all the hardware. All the distributions tested, except for one or two, could not detect one component here and there. All distributions except Storm Linux could auto detect the hardware. The S3 Trio would run perfectly at 1024x768 along with the monitor. The D-Link 100 MBps network card also worked perfectly on the network. Majority of the distributions could detect the network card and the other components during the installation procedure itself.




RedHat: good hardware detection capabilities

Usually the card and monitor can run perfectly at 1024x768 on any operating system, but in Linux Mandrake we had a bit of trouble running our graphics card at 1024x768 at 32-bit colour. At this resolution, we witnessed a bit of distortion on the desktop while running X and we had to reduce the resolution to 800x600 to make the display run perfectly. The trouble was not just with Mandrake. We found that Storm Linux was worse than Mandrake because it failed to detect any of our hardware, including the monitor and the network card. We tried the different variants of the S3 Trio card with various monitors, but in vain. We finally had to settle for a virtual desktop running at 16 colours and continued with the remaining tests with these settings for Storm Linux.

**All those apps**

Shortage of applications is one problem that most people expect with Linux. The truth is that Linux has a wide range of open source applications available over the Internet and there are sites such as www.freshmeat.net that regularly give you a preview of what's in store.

GIMP, Electric Eye and KDE Media Player are common applications installed by default with most of the distributions that have KDE or Gnome installed on them (all the distributions we tested had either KDE or Gnome installed). A simple set of card games is also installed by default. Netscape Navigator and Konquer are the browsers that you will usually find. However, there are other manuals and support, which may be included with the whole package.

The distributions that we tested came with a big collection of CDs. RedHat and SuSE provided us with the maximum number of CDs. SuSE comes parcelled with seven CDs, which includes the installation CDs and extra packages. RedHat gives you 11 CDs with a huge variety of applications.

## Types of Linux Distributions

Linux is not just a desktop-based operating system. In fact, Unix and its variants have been better known as servers. The same is the case with Linux. Today, there are Linux distributions that can fit into a single floppy, and yet include various services such as a Web server, a firewall, a software router, etc. All it takes is downloading an image from the Internet and writing it on a floppy. After that you can simply run a whole server off that floppy.

Linux currently supports various systems ranging from PPC (PowerPC), Intel to SPARC and even mobile processors or embedded chipsets. You even have Linux distributions that can be installed just like another Windows application, such as WinLinux and Linux for Windows 9x, which will run off a FAT partition that stores another virtual UMSDOS file system, thus eliminating the need to create a separate Linux partition or a boot loader.

E-smith server and gateway is a distribution that is meant for servers and it runs mail servers, POP3 and telnet on it. Calcaria Linux is a small distribution that allows you to run Linux on Psion-based Palmtops. There are even distributions that act as firewalls. Language-specific distributions aren't rare anymore and you do have distributions for foreign languages.

## Windows Emulation

Well, most users would not want to stick to Linux as their main operating system. There are several alternatives that have been taken into consideration in Linux itself. There are emulators such as Wine (Windows emulator), which allows you to run Windows-based applications on the Linux platform itself. All you have to do is mount your Windows partition and specify the path of your Windows system directory. After that you can simply start up most Windows-based applications on the system. Colours and settings are picked up by Wine itself and you have almost the same look generated by the emulator.

Apart from emulation, other alternatives are also available. These require more CPU power and RAM. Besides, unlike Wine, these software aren't free. VMWare is one such software that allows you to boot another operating system from a standalone operating system.

Wine might give emulation for most programs, but VMWare gives you quality working conditions. However, its system requirements are quite high.

Some work has also been happening the other way round, running Linux through Windows. One example is Win Linux, which is a Linux distribution running through Windows. Even the installation for Win Linux is through Windows.

There are emulators for other operating systems as well, such as DOSEmu, which emulates DOS. WinLinux is a distribution that installs on the Windows partition and can be run through itself.

Both these distributions also give a DVD—a big help for those who have a DVD drive as it saves you the trouble of inserting CD after CD during the installation.

Some of the main applications that come bundled with SuSE are the Star Office 5.2 suite, CryptoFS and Amavis, which is a virus-proof e-mail system. The normal installation puts Star Office into your hard drive. However, you need to manually initialise the installation of the office suite after the installation.

RedHat isn't too far behind either. Similar packages are given in the CDs. The normal install size comes to around 1.3 GB in the case of RedHat. The install size for SuSE, RedHat and Mandrake usually comes to around 1 GB, which includes a sufficient number of applications that would be required by a home user, thus eliminating the need for the other extra CDs.

Mandrake didn't come with any extra CDs or manuals. We only received two main installation CDs, and that too in the form of a 'burnt CD' distribution, custom made as if burning on to a CD-R. Mandrake installs KOffice for the office users.

### And some features

Standalone features are small features that are very useful while using Linux, but which don't quite fit into a particular category. These may be small tools and packages created by a distribution for configuration of hardware or for other reasons.

One interesting tool that Storm Linux comes along with is SAS, which is a user- and group-management tool. The installation file format is based on DPKG (Debian's package format)

Linux Mandrake has its own user management tool, Userdrake. Mandrake comes packed with a whole lot of applications for the Internet. There are messengers and browsers, which people working on the Net will find useful. The rest of the distributions use most of the tools that come along with KDE or Gnome for configuring the system.

Linuxconf, a configuration tool for hardware and other components such as daemons (programs required to start during boot up as they are the main base for other applications to run) and boot loaders, is also widely used in most of the distributions. In RedHat, however, we had trouble starting up Linuxconf.

The default file installation format is usually .RPM and .DEB, which are default formats in RedHat and Debian. GnoRPM is usually found in distributions for the installation of RPM files.

### Vote for value

The distributions today can all be downloaded from the Net. However, there's more than simply the installation itself in the whole distribution. A majority of the distributions come with extra manuals and CDs that sometimes have commercial software.

RedHat came with the maximum number of CDs. It comes with a lot of demos and also a lot of commercial packages. It has Star Office 5.2, a complete Power tools CD with a huge number of applications. Adobe Acrobat and messaging tools for the Internet are also available. The price for these packages is, however, quite a lot and therefore it is suitable only for professionals.

www.thinkdigit.com

## SCORE BOARD The Linux Choice

| Distribution Name | Best Linux 2000 | Corel Linux 2nd Ed | Mandrake Linux 8.0 | Red Hat Linux 7.1 | Storm Linux | SuSE Linux 7.2 | Turbo Linux 6.1 |
|---|---|---|---|---|---|---|---|
| Features | | | | | | | |
| GUI Installation | Yes | Yes | Yes | Yes | Yes | Yes | No |
| Kernel | 2.2.16 | 2.2.6 | 2.4.3 | 2.4 | 2.2.13 | 2.4.4 | 2.2.16 |
| XFree86 | 3.3.6, 4.0.1 | 3.3.5 | 4.0.3 | 4.0.3 | 3.3.6 | 4 | 3.3.6 |
| Display card detection | Yes | Yes | Yes | Yes | No | Yes | Yes |
| Monitor detection | Yes | Yes | 1024x768 problems | Yes | No | Yes | Yes |
| Contact | G.T. Enterprises | G.T. Enterprises | G.T. Enterprises | G.T. Enterprises | G.T. Enterprises | G.T. Enterprises | G.T. Enterprises |
| Price | Rs 700 | Rs 1,800 | Rs 400 | Rs 7,600 | Rs 1,800 | Rs 3,000 | Rs 1,995 |
| Phone | 080-6606093 | 080-6606093 | 080-6606093 | 080-6606093 | 080-6606093 | 080-6606093 | 080-6606093 |
| Fax | 080-6671407 | 080-6671407 | 080-6671407 | 080-6671407 | 080-6671407 | 080-6671407 | 080-6671407 |
| E-mail | gtcdrom@vsnl.com | gtcdrom@vsnl.com | gtcdrom@vsnl.com | gtcdrom@vsnl.com | gtcdrom@vsnl.com | gtcdrom@vsnl.com | gtcdrom@vsnl.com |
| Web site | www.bestlinux.net | www.corellinux.com | www.linux-mandrake.com | www.redhat.com | www.stormlinux.com | www.suse.com | www.turbolinux.com |
| Grade | B | B+ | B+ | B+ | B- | A- | B |

SuSE Linux 7.2 costs Rs 3,000, which is pretty good considering the customisation and work put into compiling such an operating system. There are seven CDs and a DVD for those who have a DVD drive. SuSE Linux also has a huge application database that includes music and sound creating tools. It also includes anti-virus and backup software, as also VMWare for users who need to run Windows and Linux at the same time.

Star Office 5.2 and KOffice are included with the whole distribution and there are Internet tools such as messengers, firewall's proxies, etc. It also includes the Crypto File system for security users. Buying SuSE Linux is certainly a good deal. It has everything you would need. There is also IP video telephony and installers for SuSE Linux over a network. There are demos of games and some other applications too.

Corel Linux, which is a good distribution for home users, comes packed with three CDs, which include the installation CD, source CD and a Loki games CD. There is also a detailed manual. The package costs Rs 1,800, which seems a bit costly given what's included in the package. A better choice would be to pay a little more and get a package such as SuSE Linux 7.2, which gives you a lot more.

### Substitutes for Your Favourite Windows Apps

| | | |
|---|---|---|
| Microsoft Office | : | StarOffice |
| Winamp | : | X11Amp, Xmms |
| ICQ | : | LICQ |
| mIRC | : | Xchat |
| Internet Explorer | : | Netscape Navigator, Mozilla |
| Microsoft Outlook | : | Netscape Messenger |
| Microsoft Frontpage | : | Netscape Composer |
| Realplayer for Windows | : | Realplayer for Linux |
| Network Neighborhood | : | Lin Neighborhood |
| Yahoo Messenger for Windows | : | Yahoo Messenger for Linux |

## CONCLUSION

We received all kinds of distributions aimed at the desktop user. All of these distributions are improvements over the earlier versions in terms of interface and features. When it comes to hardware detection, features, the bundled applications and the ease of use, **SuSE Linux 7.2** comes out as a clear winner. And at Rs 3,000, the price tag isn't too high either.

When you install a desktop Linux distribution, you're basically looking to replace Windows, or run both in conjunction. However unlike Linux, Microsoft products cost much more and come with no extra applications such as office suites, image editing tools, online tools, small services, etc.

You need to either download freeware applications from the Internet, or buy commercial applications off the shelf to compensate for what's not there, and is needed. Besides, the package includes more than just the installation itself. SuSE Linux gives you the operating system itself and a whole lot of programs such as office suites, and media editing and viewing tools.




RedHat is also comparable on this count as it comes with 11 CDs. Compared to SuSE, RedHat does not require too much customisation, but it does include a lot of software and packages in the default install.

Mandrake Linux is more compact than the other distributions. The applications included are largely the basic default applications installed with KDE and Gnome. Other versions of Mandrake with manuals, etc, are available, but these cost a bit more. Corel is good for home users who have never used Linux but are keen to try a distribution that has a straightforward installation process. Features and software that are installed with the distribution are, however, very basic. The components of the distribution are very old and outdated as compared to the other top distributions.




SuSE: offers a large number of usable packages



Imaging: Neeta Wadiker

# A FORCE to reckon with!

PC motherboards are never going to be the same again… and the nForce is here to ensure that

ROSSI FERNANDES

When you have a major system upgrade on the cards for your old PC, the components that you would want to replace are probably your processor or video card/soundcard. A processor upgrade usually means that you would have to consider replacing your motherboard. AMD enthusiasts can now look forward to nForce chipset based motherboards with mind blowing features such as integrated high-end video, surround sound and much more.

nVidia, market leader for 3D graphics cards, has just introduced its first chipset, which will be used in motherboards for AMD's desktop processors. These motherboards, which will probably be available by the third quarter of the year, will have a GeForce 2 class graphics card and Dolby 5.1 surround sound on board. This implies that you will no longer have to resort to an expensive add-on graphics card or soundcard for decent multimedia performance. The nForce has also integrated an Ethernet card and modem into the motherboard in an attempt to provide high performance at a relatively lower cost than has ever been available before.

### The nForce itself

**IGP:** The North Bridge is one of the most important chips on the motherboard—it is a vital link between the memory subsystem, the CPU itself and the graphical subsystem. The North Bridge on the nVidia motherboards is also called the

IGP or Integrated Graphics Processor. The IGP will have an inbuilt graphics accelerator, the likes of a GeForce 2 MX, to power your graphics applications and 3D games, and aspires to be the most powerful integrated graphics chipset ever put on a system, with a filter rate of 350 mega pixels per second. The Geforce 2 MX also includes standards and features such as Transform and Lighting (TnL), which constitutes live rendering of paths of light in games, 3D applications, etc.




While there won't be any integrated RAM for the graphics card, it will make use of your system memory for applications. And if you're in search of the best 3D accelerator card around, you can always plug-in an external 3D accelerator card into the AGP slot on the motherboard, unlike boards such as the i810. The integrated Geforce 2 MX gives you the advantage of 6x AGP bandwidth access to the motherboard.




Another technology integrated in the IGP, called the TwinBank Memory Architecture, gives high bandwidth access between the graphics processor and memory, equivalent to a DDR (Double Data Rate) memory based 3D accelerator.

**MCP:** The South Bridge on the nForce-based motherboards is also called the Media and Communications Processor (MCP), which earlier used to handle the IDE controllers and various interfaces such as the PCI Slot, etc. The nForce chipset will come with a dual ATA-100 controller for ATA 100 hard drives. Coupled with this is a built-in 10/100 MBps LAN card with an internal 56 Kbps modem. There are also going to be six USB ports instead of the normal two to four ports on standard motherboards.

Streamthru is another technology that will provide high bandwidth between various interfaces such as disk drives, LAN, etc, thereby giving you smooth audio and video coupled with network speed enhancements.

**APU:** Generally, you would have to buy a surround soundcard, which would give you 4.1 or 5.1 surround sound. One of the main additions to the integrated chipsets is the Audio Processor Unit or APU. While most integrated chipsets give you simple stereo sound, the APU in the nForce chipset comes with 5.1 surround sound, thus converting your computer into a personal home theatre system—provided, of course, that you get yourself a good set of surround speakers. The APU is totally DirectX 8 compliant and gives you 64 3D streams or 256 stereo streams.

### The technologies involved

**Dynamic Adaptive Speculative Pre-Processor (DASP):** This is a smart piece of technology whose basic task is to ascertain future patterns that may be encountered by the processor. This takes the load off your main CPU which otherwise handles this task. The technology allows you to make use of the bandwidth, which may be static at any particular moment, to ascertain future information and cache the same for later use, thereby giving optimal performance. Similar technology has been implemented in the Intel Pentium 4 processor for improved performance. However, among motherboards, this technology is available only on the nForce.

**TwinBank Memory Architecture:** This is a new technology used in the nForce's IGP for providing very high bandwidth. There are two types of TwinBank Memory Architectures: the 128-bit and 64-bit 133 MHz DDR interface. Intel's Pentium 4 uses a similar method using a dual RDRAM (Rambus Dynamic RAM) channel while the nForce uses DDR RAM. Though cheaper than the RDRAM, it is priced quite high even now.

**AMD Hypertransport:** nVidia has brought into action the AMD Hypertransport, earlier known as Lightning Data Transport. In the nForce chipset, the AMD Hypertransport technology comes into use between the IGP and MCP. The width of the ports used for sending and receiving data from one chipset to another on the nForce-based motherboard is anything between 2 to 32 bits, operating at a frequency of 200 MHz. This runs at a double rate, thus making the transfer rates similar to a 400 MHz bus, implying plenty of bandwidth between the chipset itself.

### Getting them going

So how do all these high-end components, integrated into your motherboard, work together to

| Specification | Regular system | | With nForce-basse | |
|---|---|---|---|---|
| | Configuration | Price | Configuration | Price |
| CPU | Intel 1GHz | $170 | AMD Athlon 1GHz | $90 |
| Motherboard | 815 Motherboard | $90 | NForce-based motherboard | $200 |
| Graphics | GeForce 2 MX | $50 | Integrated | - |
| Sound | SbLive Value | $40 | Integrated | - |
| Modem | 56kbps modem | $10 | Integrated | - |
| Ethernet | 10/100MBPS NIC | $10 | Integrated | - |
| RAM | 128MB SDRAM | $10 | 128MB DDR RAM | $20 |
| Total | | Approx $380 | | Approx $310 |

## Versions of the nForce

There will be quite a few variants of the nForce chipset available, with all kinds of add-on and reducible components as per individual needs. The IGP could have a 64-bit memory interface or a 128-bit memory interface. As for the MCP, the Audio processor can be Dolby Digital 5.1, or without the Dolby Digital sound for those who don't need it. The prices for these additions and reductions will also change accordingly. You can also decide on an integrated graphics processor or the plain motherboard itself with the rest of the features. So if you have a higher graphics card than the GeForce 2 MX, such as a GeForce 2 GTS or a GeForce 3, you could decide on an nForce-based motherboard without the graphics processor, thus cutting costs. Similarly, if you have an SB Live soundcard and need to upgrade to a higher configuration, but without the Dolby Digital 5.1 sound from the integrated APU, then you can choose the chipset with the integrated APU.

## History of Integrated Motherboard Chipset

The Motherboard industry has, uptil now, been dominated by chipsets such as Intel, VIA and Ali which provide integrated audio and video on the motherboard itself. These chipsets, however, are in no way as powerful as the nForce chipsets are going to be. The Intel range of integrated chipsets includes the OpenGL-compliant Intel 810, which uses the Intel 754 graphics card, one of the oldest 3D accelerator cards with OpenGL support. While the chipset's performance seemed pretty good for the time, competition slowly began to grow in the form of early nVidia and ATI graphics cards. VIA also has and has had chipsets with integrated sound and graphics. Similarly, the i810 gives integrated audio and video, which is a cheaper option for the home user. Ali, with its sound and audio integrated Aladdin chipsets, has been offering AC 97 audio to its users. There have been some motherboards with inbuilt modems and network adapters too, but never before have all these high-end components come together on one main motherboard.

nVidia ventured into the graphics card business with the Riva 128, slowly moved into GeForce based chipsets, and are now creating motherboard chipsets with high-end performance. Having recently worked in tandem with Microsoft on the Xbox, nVidia decided to make use of experts and resources and enter the motherboard market.

give you an optimal performance machine? To start with, the IGP plays the central role of communicating with the processor, the MCP and the 128-bit DDR memory. Here on though, the integrated graphics processor is of no use. The Twin-Bank Memory Architecture then comes into action, creating a huge bandwidth gap between the 128-bit DDR memory and the main IGP itself. DASP works side by side with the main processor of your computer, by determining future patterns. AMD's own Hypertransport, placed between the two bridges on the nForce chipset, provides a huge bandwidth of 800 MBps with the help of the dual 200 MHz DDR bus. Down south in the MCP, the APU delivers 5.1 Dolby Digital Sound to the speakers. The MCP also gives you a dual ATA100 hard disk connectivity, six USB connectors along with two USB hubs for connectivity to external drives, and an inbuilt 10/100 MBps Ethernet card with an integrated 56 Kbps modem. Streamthru technology in the MCP ensures streaming audio and video and also optimal network performance through the integrated network card.



An nForce reference board

**What this means...**

nVidia's entrance into the motherboard chipset industry implies direct competition for the companies already ruling the roost. With each of these companies specialising in one particular area, nVidia's most recent move can be seen as an attempt to take over all these areas and become an all rounder. Some of the companies that nVidia is taking on head to head are motherboard chipset companies such as Intel and VIA. Competition is also evident for graphics processor companies such as ATI, Matrox, etc, which have plans to give out high-end graphics processors integrated into motherboards like never before. Intel and VIA motherboards have never had the capability to deliver such high-end performance ever. The performance of the Geforce 2 MX like core in the nForce IGP cannot be matched by the VIA and Intel graphics processors.

Creative has been ruling the sound industry so far by providing home users with 5.1 surround sound using the Creative SBLive soundcard. But a change in scenery is evident as home users can now opt for a motherboard with a built-in 5.1 surround soundcard. nVidia claims that their chipset-based motherboards will procure a better level of performance from existing AMD processors. Most of these technologies aren't available all in one place on the existing motherboards.

As far as the consumers are concerned, instead of having to live with the pathetic performance that most integrated motherboards give you, you can now avail of the hard-hitting performance of an nForce-based motherboard at a relatively reasonable price, with variants that offer you fewer features at a lower price. You will also have the flexibility to choose whether or not to upgrade to top-end graphics card (maybe the new GeForce3) and soundcard (the Creative SBLive! Platinum?) owing to the availability of slots for add-on cards. You also probably won't need to worry about buying a modem or LAN card anymore, because the integrated devices should be sufficient for most Windows users.

Those of you intent on buying a new branded PC, such as a Compaq or HP, might want to purchase one that offers an AMD-nForce combination. This is, of course, assuming that these manufacturers are sensible enough to use the nForce for their high-end systems at a lower price.

**Our prediction**

While the price tag of the nForce chipset is currently unknown, the cost of motherboards based on this chipset are likely to be anything between $250 to $350 (approximately Rs 11,500 to Rs 16,100), which is pretty decent for a motherboard packed with high performance components.

So what is the nForce really going to do to the computer world? The nForce could be adopted by system builders for creating performance machines aimed at price conscious users who are willing to pay a little extra for performance gains. If the prices drop further, as is quite likely over a period of time, the popularity of the nForce-based motherboards is bound to increase as compared to the i810 or i815 unit with its skimpy little graphics processor.

The first set of nForce-based motherboards should be out in a couple of months from now. nVidia's done it with the graphics card processor industry and now it's at it again, this time aiming for the bigger picture of computing.

HARDWARE

# Radar

A photo-quality inkjet printer, two handheld devices, the Dreamcast gaming console, an Internet TV and other products tested

Find it on digit interactive

**More Info** on the hardware products tested. Check out **Mindware**

## Acer 56x CD-ROM Drive

### Just another CD drive

The drive logged average results in the SiSoft Sandra test. However, the drive's speed while ripping tracks from an audio CD to wave format was quite good. Strangely enough, the drive showed higher performance when DMA was disabled. This is bad because when you enable DMA, performance should increase, which is not the case here.



**SPECIFICATIONS:**
56x read speed
Benchmarks:
Overall score in Sisoft Sandra: 1750
Sequential read speed of 2470 KBps
Random read speed of 676 KBps
Score of 1000 in CD Winmark
7 seconds to rip a 20.79 MB audio track to MP3, 15 seconds to rip the middle track of 42.24 MB and 19 seconds to rip the last track of 53.07 MB

| verdict | B + |
|---|---|
| Acer 56x CD-ROM Drive | |
| Performance | |
| Build Quality | |
| Value for Money | |
| Features | |
| OVERALL | |

\+ Fast ripping time
\+ Economical
\- No software, no manuals
Price: Rs 2,100
Contact: Acer Communication
Phone: 022-5705730 Fax: 022-5705235
E-mail: joe@acercm.com.in
Web site: www.acercm.co.in

## Compaq iPaq H3630

### A powerhouse

Exceptionally light but still very rugged, this handheld is a design marvel when it comes to saving space and integrating components intelligently. There is a small button at the top left side of the handheld that allows you to take one-click voice notes and attach them to related text–a feature no Palm OS based handheld offers.



**SPECIFICATIONS:**
32 MB RAM, 16 MB of ROM, a 206 MHz Intel Strong ARM 32-bit processor, a 320x240 pixels wide TFT LCD screen, a built-in lithium ion rechargeable battery
Bundled software: Comes pre-installed with Pocket Word, Pocket Excel, Microsoft Reader for e-books, Microsoft Money and Microsoft's Windows Media Player for Pocket PC
Features: Plays Windows media files and has a 2.26x3.02 inch colour reflective TFT screen

| verdict | A - |
|---|---|
| Compaq ipaq H3630 | |
| Performance | |
| Build Quality | |
| Value for Money | |
| Ease of use | |
| OVERALL | |

\+ Very feature-packed, colour display, powerful processor, multimedia-capable
\- Excessively priced
Price: Rs 43,875
Contact: Radz Intellisync
Phone: 022-3678293 Fax: 022-3678193
E-mail: radz101@hotmail.com
Web site: www.radzinfo.com

## HP DeskJet 930C

### Photo quality

A photo-quality inkjet printer aimed at the power user. The printer is very quiet, has above-average speed and a very impressive set of bundled software. The printer driver software is very simple to configure. The printer is also able to handle different media types including envelopes, transparencies and banners. The build quality was, however, average.



**SPECIFICATIONS:**
Features: Accompanied by 17 CDs of BPB 250,000 Graphics and Delta Foto Suite. Allows printing on different paper sizes ranging from envelopes to banners
Benchmarks:
1 minute 38 seconds to print 5 pages of plain text in grayscale mode and 1 minute 37 seconds to print in normal colour mode
8 minutes 32 seconds to print 5 pages of high quality image in grayscale and 8 minutes 32 seconds to print in colour mode

| verdict | A - |
|---|---|
| HP DeskJet 930C | |
| Performance | |
| Build Quality | |
| Value for Money | |
| Features | |
| OVERALL | |

\+ Very impressive photo printing
\+ Silent
\- Rather flimsy top cover
Price: Rs 9,999
Contact: Hewlett-Packard
Phone: 080-5216120 Fax: 080-5216121
E-mail: princy_bhatnagar@hp.com
Website: www.hpindia.com

## Palm M105

**Versatile and highly usable**

A replacement to the now out-of-production Palm IIIx, this handheld allows you to connect to your mobile phone and dial to the Internet. Overall, this is a great choice for the price: go for it if you plan to buy a handheld for keeping contacts and information and for having some fun too, but can't afford the costlier variants of the Palm handhelds.



**SPECIFICATIONS:**
8 MB RAM, 16 MHz Motorola 68328 microprocessor, 3.25-inch, 160x160 pixels monochrome LCD display with an invert backlit LCD screen, built-in IR port and serial port that allows synching with your PC Comes preinstalled with Palm OS 3.5

| verdict | A - |
|---|---|
| Palm M105 | |
| Performance | |
| Build Quality | |
| Value for Money | |
| Ease of use | |
| OVERALL | |

+ Good AAA Alkaline batteries
+ Economical
Price: Rs 18,530
Contact: Radz Intellisync
Phone: 022-3678293 Fax: 022-3678193
E-mail: radz101@hotmail.com
Web site: www.radzinfo.com

## SEGA Dreamcast

**A box full of fun**

Far more powerful than the Sony Playstation and the first truly connected console to hit the market, the Dreamcast comes runs a special version of Microsoft Windows CE.

For sheer gaming fun, this is a very good device, and provides for very robust build quality, a large set of game titles and an intuitive interface.



**SPECIFICATIONS:**
128-bit PowerVR 3D graphics, built in 56 K modem
Features: Internet browsing CD-ROM, four built-in controller ports, option for memory cards that can be fitted in the game pad itself

| verdict | B + |
|---|---|
| Sega Dreamcast | |
| Performance | |
| Build Quality | |
| Value for Money | |
| Features | |
| OVERALL | |

+ Very crisp and fluid graphics
+ Good CD quality audio capabilities
+ Wide variety of games available
- Rather flimsy controllers
Price: Rs 12,999
Contact: Stracon India
Phone: 011-6287290 Fax: 011-6287148
E-mail: stracon@ndf.vsnl.net.in

## Videocon Internet TV

**Net-on-TV**

This TV is the first of its kind that acts as a simple TV and lets you browse the Net as well. It comes with an attractive infrared, black-coloured keyboard, 110 channels and an Internet browsing box. It can display conventional Web pages with HTML text and tables, but was unable to display pages containing Flash and Shockwave .



**SPECIFICATIONS:**
56 K modem, wireless Internet keyboard
Features: Normal to Internet mode with just a press of a key

| verdict | B + |
|---|---|
| Videocon Internet TV | |
| Performance | |
| Build Quality | |
| Value for Money | |
| Features | |
| OVERALL | |

+ Good looks
+ Easy to operate
- Doesn't display all pages
Price: Rs 18,990
Contact: Videocon International
Phone: 022-2871798 Fax: 022-2873822
E-mail: info@mktg.videoconnect.com
Web site: www.videoconworld.com

## Nishubuki 1 GHz laptop

**Lap it up**

Considering the overall configuration, it packs a lot into one case. However, its scores in Content Creation Winston 2000 and in Business Winston 99 were not very impressive given its 1 GHz processor and 256 MB RAM configuration. Even the Quake III tests were not very impressive, but it is noteworthy that we were able to run the test at all on a laptop!



**SPECIFICATIONS:**
Intel 1GHz processor, 256 MB RAM, 20 GB hard disk, CD-Writer, 14.1 inch XGA screen, Trident Cyberblade i1AGP graphics card
Benchmarks:
25.3 in Content Creation Winston 2000, 28.3 in the Business Winston 99, 15.7 fps in Quake III (normal quality) and 2.6 fps at 1024x768 at 32-bit depth
Lasted 2 hours 9 minutes in ZDBench BatteryMark

| verdict | A - |
|---|---|
| Nishubuki 1 GHz laptop | |
| Performance | |
| Build Quality | |
| Value for Money | |
| Features | |
| OVERALL | |

+ Not expensive
+ Good configuration
- Low-end graphics card
Price: Rs 1,19,000
Contact: Nishubuki Computer Systems
Phone: 022-5825965
Fax: 022-5379719
E-mail: nitin1@bom5.vsnl.net.in

SOFTWARE

# Radar

PCanywhere, a tool to remotely control a computer, A surveillance software for your PC, a Web graphics software package, an anti-virus package and other software tested

Find it on digit interactive

**More Info** on the software products tested. Check out **Mindware**

## Worth a bite

A unique and extremely useful software that gives you access to only that content on the Internet which you need, by using 'Bites', parts of a Web page that are viewed on the desktop in tiny windows. The help is extremely useful and there is a comprehensive tutorial, which shows the user a video of how to operate the software.

## Free Bites




**SPECIFICATIONS:**
Features: Can store streaming media and dynamically generated data, Bites can be password protected
File size: 2.39 MB
Download size: 1.32 MB

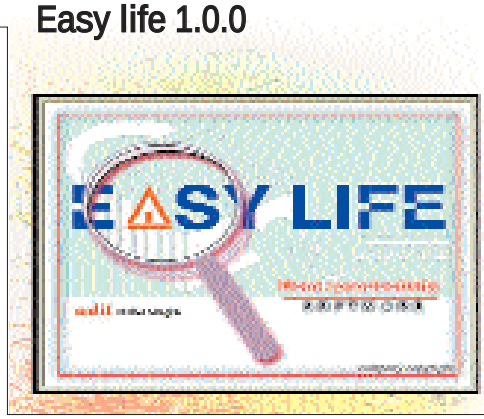
| verdict | B + |
|---|---|
| Free Bites | |
| Ease of use | |
| Features | |
| Performance | |
| Value for money | |
| OVERALL | |

\+ Innovative idea, very useful
\+ Excellent and comprehensive help system
\- Tends to load pages slower on a dial-up connection
Price: Freeware
Web site: www.databites.com
E-mail: help@databites.com

## In the balance

A utility for those who need to maintain home finances. It provides you with various options for managing your finances under different categories, such as investments in shares/debentures, loans, insurance, fixed deposits, etc. The interface is quite neat and the installation is simple, barring the fact that your machine needs to be equipped with MS Office.

## Easy life 1.0.0




**SPECIFICATIONS:**
Install size: 42.7 MB,
Features: User level security, 15 reports generated

| verdict | B |
|---|---|
| Easy life 1.0.0 | |
| Ease of use | |
| Features | |
| Performance | |
| Value for money | |
| OVERALL | |

\+ Neat interface and easy to use
\- Search feature shows inaccurate results
Price: Rs 1,950
Contact: Adit Microsys
Phone: 079-6400255
Fax: 079-6462635
E-mail: biren@microsys.com

## Securely in control

The latest version of PCanywhere from Symantec is a tool that lets you control a remote computer. It stands out from other such services such as GoToMyPC, VNC and LapLink because of the unparalleled security and features that it offers. Password protection is compulsory, and PCanywhere has support for nine authentication types.

## Symantec PCanywhere 10.0



**SPECIFICATIONS:**
OS support: Windows 2000, NT, 95, 98, Me
Features: Support for nine authentication types, five different installation packages to suit different needs, enables connection through directly using the various ports on the motherboard or through infrared port or through protocols such as TCP/IP, NetBios and SPX

| verdict | B + |
|---|---|
| Symantec PCanywhere 10.0 | |
| Ease of use | |
| Features | |
| Performance | |
| Value for money | |
| OVERALL | |

\+ Excellent manual with screenshots
\+ Better security
\- Configuration difficult
Price: Rs 13,500 + tax
Contact: Tech Pacific
Phone: 022-5960227
E-mail: vpai@symantec.com
Web site: www.symantec.com

## Private eye

A surveillance software for your PC from Spectrasoft, using which you can monitor all the activities that have taken place in a particular PC and generate a key-log. The installation can be done in a couple of minutes. It can also send you a mail report. It operates in stealth mode and it's very difficult to detect whether the application is running.

## E-Blaster



**SPECIFICATIONS:**
Features:
Runs in stealth mode, can access the keylogger anywhere on the mail-box

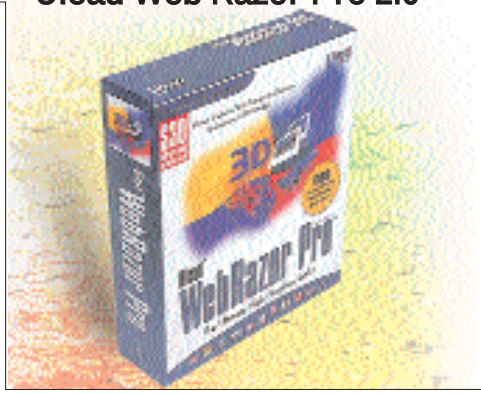
| verdict | B + |
|---|---|
| E-Blaster | |
| Ease of use | |
| Features | |
| Performance | |
| Value for Money | |
| OVERALL | |

\+ Small utility
\+ Easy to install
Price: Rs 3,536 (for one license)
Contact: Softalk Technologies
Phone: 011-6281806
Fax: 011-6281647
E-mail: softtalk@vsnl.com

## A box of goodies

A complete Web graphics software package that includes some of the most popular Web graphic applications: ULead Cool 3D 2.5, ULead Gif Animator 4.0, U Lead Photo Explorer 5.0 and Smart Saver Pro 2.0. This collection of tools lets you create high-quality 3D texts for Web page headings, create animated gifs and cut down file sizes of images.

## Ulead Web Razor Pro 2.0




**SPECIFICATIONS:**
Features:
Package includes ULead Cool 3D 2.5, ULead Gif Animator 4.0, U Lead Photo Explorer 5.0 and Smart Saver Pro 2.0

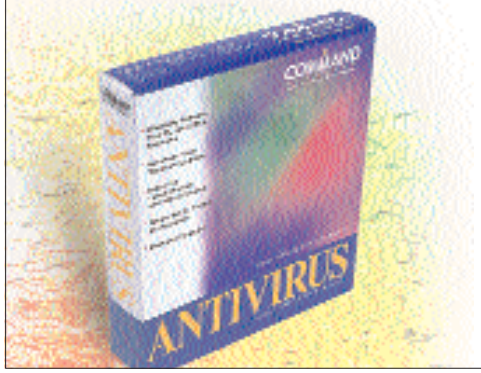
| verdict | B + |
|---|---|
| ULead Web Razor Pro 2.0 | |
| Ease of use | |
| Features | |
| Performance | |
| Value for Money | |
| OVERALL | |

\+ Wide range of features
\+ Other related software bundled with the package
Price: Rs 1,950
Contact: Microwave Computer Services
Phone: 022-8729275 Fax: 022-8727446
E-mail: sales@mwcdrom.com
Web site: www.mwcdrom.com

## Better than most

It takes lesser time in cleaning and detecting than most other software. The help is pretty comprehensive and guides you through the various installation procedures and the operating features of the anti-virus. However the software consumes 3 MB of RAM. The software managed to detect and clean the top 10 most prevalent viruses in the detection .

## Command Anti Virus Software




**SPECIFICATIONS:**
Features: Available for Windows 9x/NT/2000
Install size: 8 MB
Benchmarks: 10 minutes 54 seconds to scan a database of more than 10,000 viruses on a 2.05 GB partition, including viruses in compressed files

| verdict | B |
|---|---|
| Command Anti Virus Software | |
| Ease of use | |
| Features | |
| Performance | |
| Value for Money | |
| OVERALL | |

\+ Fast scanning time
\- Bit pricey
Price: Rs 3,130
Contact: Office Efficiencies
Phone: 022-50066550
Fax: 022-50066551
E-mail: sales@oe2000.com
Web site: www.oe2000.com

## Security First

An easy-to-install encryption software, it asks you to specify a location where you want to store the volume file. It then asks for a password that you would have to use when accessing the contents of the volume, though the main volume is not protected. The software creates a ghost drive where you can simply drag and drop whatever files you want protected.

## CYPHERIX Cryptainer 2.0




**SPECIFICATIONS:**
Runs on Win 95/98 and Windows 2000 with 32 MB RAM.

| verdict | B |
|---|---|
| CYPHERIX Cryptainer 2.0 | |
| Ease of use | |
| Features | |
| Performance | |
| Value for Money | |
| OVERALL | |

\+ Easy to operate
\- Very high priced
Price: Rs. 5,875 plus taxes
Contact: Cypherix
Phone: 022-4453670
Fax: 022- 4453371
E-mail: info@cypherix.com
Website: www.cypherix.com

# Reviews

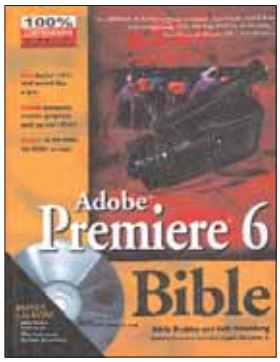
Find it on digit interactive

**Arena**
For game reviews check out,
Playware

## Adobe Premiere 6 Bible

### Fun with video editing

This book is aimed at providing you with all you need to know about Adobe Premiere 6. Whether professional or novice, you can gain useful tips on video editing. You get an in-depth look at other features of the software such as capturing video, audio editing, creating type graphic effects, etc. You also get a CD containing a trial version of Adobe Premiere, Adobe After Effects and GoLive and sample premiere clips.




Contact: IDG Books
Phone: 011-3260877
Fax: 011-3275895
E-mail: idgbooks@vsnl.com
Price: Rs 499 (with CD)
Rating: ▲▲▲▲△

## Red Hat Linux 7.x Bible

### Get Linux-ed

If you've always had an itching to get more closely associated with Linux, then this book is the right place to start off. It is aimed at both Linux freshers and veterans looking for tips on working with Linux. The book looks at chapters such as working with the desktop, accessing and running applications, playing games with Linux, etc. Also included are three CDs containing Red Hat Linux 7.x and other applications.

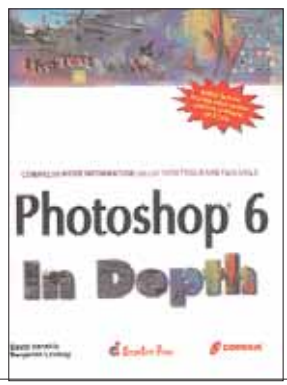



Contact: IDG Books
Phone: 011-3260877
Fax: 011-3275895
E-mail: idgbooks@vsnl.com
Price: Rs 499 (with 3 CDs)
Rating: ▲▲▲△△

## Photoshop 6 In Depth

### Imaging on display

This book is meant for the advanced or intermediate Photoshop user who needs to take his knowledge of the software higher. Therefore, you find on many occasions that the book is interspersed with samples and exercises that assume the reader has a prior basic knowledge of the software. You get acquainted with the new features of Photoshop 6 and many of the advanced image-editing options available.




Contact: IDG Books
Phone: 011-3260877
Fax: 011-3275895
E-mail: idgbooks@vsnl.com
Price: Rs 499 (with 2 CDs)
Rating: ▲▲▲▲△

## On the Stands

### Deluxe GMAT, LSAT & GRE

If you intend to do your GRE, GMAT or LSAT in the near future then this CD pack from Kaplan should help. These interactive multimedia CDs tell you how to prepare for the tests and also contain sample tests as well as links to over 400 graduate school Web sites.




Developer: Encore Software
Contact: Microware
Phone: 022-8729225
E-mail: sales@mwcdrom.com
Price: Rs 1,750

### Linux for Windows NT/2000 Admins

This book is meant for system administrators who work on Windows NT/2000 and want to move on to Linux. It explains the working of the Linux operating system in its different flavours. It also comes with a CD containing the Linux-Mandrake 7.1 distribution.




Contact: BPB Publications
Phone: 011-3325760
E-mail: bpb@vsnl.com
Price: Rs 270

### Professional ASP

This book is for people who have already done a bit in ASP and want to learn more and develop real world Web applications. This book covers almost all the new features in ASP 3.0 including working with XML data and the use of COM+ in applications.




Contact: Shroff Publishers
Phone: 022-3701433
E-mail: spd@vsnl.com
Price: Rs 650

UNDERCOVER

# The Perfect Match

## Agent 001 is seeking the cheapest motherboard-processor combination that's setting off the most sparks



Illustration: Mahesh Benkar

Pair a Cyrix III 550 costing less than Rs 2,000 with a 810e motherboard, and you have a combination for less than Rs 5,000. Beat that!

Some things go hand in hand—strawberries and cream, icing and cake and, of course, motherboards and processors! Not that I have a one-track mind, but my latest mission had me looking for a motherboard-processor combination that was easy on my pockets and packed a punch as well.

So I headed into the market looking for some really cheap but not necessarily low performing hardware.

First stop Lamington Road, Mumbai. Vendor One seems to be a big AMD fan and promises P-III like performance from the Duron. While the Duron can definitely give the Pentium III a run for its money, its biggest problem is an unavailability of cheap motherboards to complement it. This vendor could only offer platforms such as the ASUS A7V and other expensive brands. These motherboards are great performers but aren't as easy on the pocket.

So I hop over to the next shop in line where Vendor Two tells me that the Celeron II is doing well and has a plethora of choices as far as cheap motherboards are concerned. So I decided to put a cap on my budget now and asked to be shown a motherboard processor combo within Rs 8,000.

Then the vendor advised me to go in for the Celeron II 700, costing about Rs 3,000. "Add to it an 810e board for Rs 3,500 or less and you are all set," he said.

One board that was mentioned time and again was the Tiga 810+. Great! But I said I wanted some AGP functionality. Vendor Three aptly recommended an 815e. The cheapest he could think of were the Jetway and Mercury boards (Jetway J618AF and Mercury KOB-815E FSX). So I now had a deal worth Rs 8,000 but I decided to push on a bit further. I asked for a really cheap combination and even said that I was ready to sacrifice a bit of gaming. Vendor Two hit the nail straight on the head, recommending a Cyrix III 550 at less than Rs 2,000.

To top it, these processors run on all socket 370 boards, so pair it with an 810e and you get one cheap combination. A complete motherboard and CPU combination for less than Rs 5,000. Beat that!

Next I headed up north looking for a combination that could really give these so-called 'high-end' players a run for their money. The first vendor suggested the typical SiS 630 chipset based solutions, which are a great value as far as cheap solutions for the Celeron and Celeron II are concerned.

Sadly, no other vendor recommended a cheap Duron solution although both DFI and Azza have decent AMD solutions. Some vendors even tried to push some really old and cheap 440BX and VIA 693 based boards. I would seriously not go in for these motherboards unless I have some cheap Celerons lying around.

Going further north (Powai), I walked into a swanky shop in Hiranandani and met with a pretty knowledgeable chap. I pushed for a Duron solution and was very rightly suggested the Azza KT-133TX board. He then went on to recommend a Duron 800: "The combo will cost you only Rs 9,000, not a rupee more."

Remember, that some of the KT-133 based platforms for the AMD processors don't come with onboard VGA. Only solutions based on the KM133 such as the DFI AM35 EC come with onboard VGA and with pretty decent performance too (incorporating a Savage 4 based solution). Pairing the Duron 800 with the DFI AM35 EC would be just nudging Rs 9,000.

Closer to home, I enter a local shop at Andheri (W), displaying P-IV advertisements. I learnt that a P-IV kit sets you back by Rs 30,000 plus a very expensive cabinet (no less than Rs 4,000). Yes, the performance is great. But if all you want is to get online for some office work then the cheaper combinations are the ones to look at. Remember, cheap doesn't necessarily mean bad or under-performing. All it means is that you will get only what you pay for and maybe hope for more!

### Go for Value

| | |
|---|---|
| AMD-based systems | Duron 700-900 MHz+ DFIAM35EC motherboard |
| Intel and Cyrix-based systems | Celeron or Cyrix III+ Tiga 810+ motherboard |

*Want to share your experiences with getting a motherboard and processor*
*Write in to readersletters@jasubhai.com*

# A-List

## A listing of the best products in different hardware and software categories

Find it on digit interactive

**More Info** on the top five products tested in each category. Check out **Mindware**

Who's in, who's out? The competition's hot, but only the winners get to this page—a listing of the best performing hardware and software that have been tested till date in different categories.

Every month, at the Digital Media Test & Research Centre, we carry out a series of comparison tests as well as individual product reviews. Based on these tests, the best products have been listed here (*detailed reviews on Digit Interactive-Mindware*). As different products get reviewed over the months, the top products might find themselves slipping out of the charts and replaced by the latest entrants in the market. So, keep your ears sharp and eyes open and keep yourself abreast of the latest cool products.

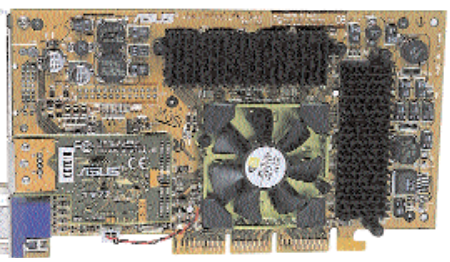
### HARDWARE

#### Monitors (14- & 15-inch)
**Sony CPD-E100**
+ Good features and performance
– Not for professionals
Contact: Rashi Peripherals
Phone: 022-8260258
Fax: 022-8190766
Price: Rs 14,100

#### Monitors (17-inch)
**ViewSonic PS775**
+ Very good image quality
+ Support for high resolution
Contact: Roop Electronics
Phone: 022-6631521
Fax: 022-6103919
Price: Rs 24,000

#### Monitors(19- & 21-inch)
**Sony CPD-G500**
+ Truly flat 21-inch screen; support for nearly every type of image
Contact: Rashi Peripherals
Phone: 022-8260258
Fax: 022-8190766
Price: Rs 86,500

#### Graphics card
**ASUS V7700 GeForce 2 GTS Ultra**
+ Blazingly Fast; DDR memory
Contact: Mnemonic Systems
Phone: 022-8260258
Fax: 022-8190766
Price: Rs. 31,500



#### Speakers
**Creative SoundWorks DTT2500**
+ True Dolby Digital-compliant sound
- Too clumsy stand for speakers



Contact: Compuage Infocom
Phone: 022-4913986
Fax: 022-4919069
Price: Rs 29,500

#### Soundcards
**SoundBlaster Live! Platinum 5.1**
+ Dolby Digital AC-3 compliant
+ High quality sound processing
Contact: Compuage Infocom
Phone: 022-4913986
Fax: 022-4919069
Price: Rs 12,500

#### Motherboards
**ASUS P4T**
+ Fits into any ATX cabinet
+ Good feature list
Contact: Rashi Peripherals
Phone: 022-8260258
Fax: 022-8190766
Price: Rs 17,500

#### Processors
**Pentium 4 - 1.4 GHz**
+ Fastest processor tested by us
+ Good build quality
Contact: Ockam Systems
Phone: 022-6234798
Fax: 022-6704503
Price: Rs 35,000 (kit including motherboard, 128 MB RDRAM and cabinet)

#### Hard disks (SCSI)
**Seagate Cheetah 18XL - ST318404LW - 18GB**
+ Blazingly fast
– Heats up quite a lot
Contact: ACI
Phone: 022-8595830
Fax: 022-8595831
Price: Rs 16,500

#### Hard disks (IDE)
**IBM Deskstar 75GXP DTLA-307075 - 75GB**
+ 10,000 RPM; good data transfer
+ 1 MB buffer
Contact: Wales Technologies
Phone: 022-3828100
Fax: 022-3828200
Price: Rs 19,500

#### DVD drives
**Aopen 1640 Pro DVD**
+ 16x DVD speeds; 512 KB cache
+ Good build quality
– Does not support DMA
Contact: Yogi Comp
Phone: 022-8806582
Fax: 022-8806582
Price: Rs 5,950



#### CD drives
**ASUS CD-S500**
+ Good performance
– Slightly inferior build quality
Contact: Rashi Peripherals
Phone: 022-8260258
Fax: 022-8190766
Price: Rs 2,700

#### CD-RW drives
**Plextor W1610TA**
+ High write and rewrite speed
+ 2 MB buffer
Contact: Zeta Technologies
Phone: 022-4102277
Fax: 022-4102277
Price: Rs 13,950

#### Laser Printers
**Lexmark Optra M412**
+ Good print speeds
– Image quality isn't that good
Contact: T.V.S. Electronics
Phone: 044-2325506
Fax: 044-2327577
Price: Rs 42,995 + taxes

#### Inkjet Printers
**Epson Stylus Color 880**
+ Very quiet; good results
+ Print resolution of 2880 dpi
Contact: Epson India
Phone: 022-8257286
Fax: 022-8267287
Price: Rs 19,000

PCs

**Dell Dimension 4100**

+ Customisation possible
– Too compact for expansion



Contact: Dell Computers
Phone: 1600338044 Toll free
Fax: 1600338046 Toll free
Price: Rs 81,999

Scanners

**Epson Perfection 1640SU**

+ Transparency unit included as standard accessory
+ Fast image scanning
– Too bulky (4.5 kgs)
Contact: Epson India
Phone: 080-5321266
Fax: 080-5581799
Price: Rs 22,500

Laptops

**Nishubuki 1 GHz**

+ Attractively priced
+ Good configuration



- Low end graphics card
Contact: Nishubuki Computer Systems
Phone: 022-5825965
Fax: 022-5379719
Price: Rs 1,19,000

External Storage Devices

**IOMEGA 2GB Jaz**

+ Very good price per MB; hard-disk-class performance
Contact: Neoteric Infomatique
Phone: 022-4172600
Fax: 022-4163679
Price: Rs 17,500

Handhelds

**HP Jornada 680E**

+ Power 133 MHz processor
+ Colour screen
Contact: Hewlett-Packard
Phone: 011-6826000
Fax: 011-6826030
Price: Rs 39,000

MP3 players

**Creative NOMAD 2MG**

+ Excellent Build quality
+ Supports WMA format and upgradeable firmware



- Controls not easily accessible
Contact: Compuage Infocom
Phone: 022-4913986
Fax: 022-4919069
Price: Rs 21,500

Keyboards

**Logitech Cordless Freedom Navigator**

+ Very comfortable
+ Extensive configuration options
Contact: Rashi Peripherals
Phone: 022-8260258
Fax: 022-8190766
Price: Rs 7,750

Digital Cameras

**Sony Cybershot DSC-P1**

+ Good Features offered
- Limited Memory



Contact: Best International
Phone: 022-2611050
Fax: 022-2624795
Email: bestint@vsnl.com
Price: Rs 49,990

Pointing devices

**Logitech Cordless Mouseman Wheel**

+ Good accuracy with features; resilient to dirt
+ Many extra function keys
Contact: Rashi Peripherals
Phone: 022-8260258
Fax: 022-8190766
Price: Rs. 4,500

## SOFTWARE

Operating systems (Windows)

**Windows 2000 Professional**

+ Very stable
– Heavy on system requirements
Contact: Integrated Business Solutions
Phone: 022-8214701
Fax: 022-8328240
Price: Rs 8,400

Operating systems (Linux)

**SuSE Linux 7.2**

+ Simple to install
+ Many bundled applications
+ Customisable Interface

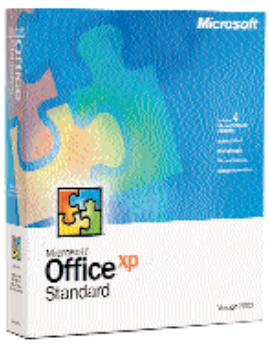


Contact: G. T. Enterprises
Phone: 080-6606093
Fax: 080-6671407
Price: Rs 3,000

Office Suites

**Microsoft Office XP**

+ Rich features
– Expensive
Contact: Microsoft (India)
Phone: 011-6294600
Price: Rs 20,500




OCR Packages

**FineReader Pro 5.0**

+ Quite accurate
Contact: Vikmans Multimedia
Phone: 011-6472325
Price: Rs 5,000

Antivirus

**Norton Antivirus 2001**

+ High detection rate
+ Good script blocking capability
– Resource hungry
Contact: N & N Systems
Phone: 022-3680512/17/18
Fax: 022-3680513
Price: Rs 1,450

Firewalls

**ZoneAlarm Pro 2.6**

+ Good performance
– No protection against ActiveX controls
Contact: www.zonelabs.com
Price: Rs 2,000 (approx)

CD-burning software

**Easy CD Creator 5 Platinum**

+ Very fast writing speed
Contact: www.roxio.com
Price: Rs 3,600 (approx)

Voice recognition

**Dragon NaturallySpeaking v5.0 (Preferred Edition)**

+ Impressive speech recognition
– High on system requirements



Contact: HCL Infosystems
Phone: 011-4526518
Fax: 011-4526579
Price: Rs 17,995

Accounting Software

**FACT 1.90**

+ Exhaustive feature list
– No security for database
Contact: Vedika Software
Phone: 022-5006490
Fax: 033-2400824
Price: Rs 14,500

# Of near misses and a perfect hit

Some people have the knack of making the best of a situation, as also the knack of making friends…

Adarsh Kaul, from our events team, is the kind who never misses the bus…or the train for that matter. So what if he and his colleagues in the events team had been totally immersed in planning and organising a massive-scale event like Planet Digit, which was held in July in Bangalore, Delhi and Mumbai.

The final details had to be sorted at the respective venues. With only days left to go for the first Planet Digit in Bangalore and still so much do Adarsh was to be the man on the spot to ensure that everything ran smoothly.

But on the day of the departure, Adarsh was still busy tying up all the loose ends and lost track of the time; 5 pm and he was still running about getting things done, when he bumped into Kaustubh, also from the events team, and Jasmine, our International Marketing manager. "Arrey, what are you doing here? Don't you have a train to catch?" asked Kaustubh. "Show me your ticket," said Jasmine. Rushed for work, Adarsh fished out his ticket and gave it to them to see the time printed on it, which said 1900 hours.

"Oh my God! Only 2 hours for the train to leave. You better get going man! It's been pouring all day and there's bound to be traffic snarl ups. As it is, it takes an hour and half to get to Mumbai Central from the office."

So his colleagues bundled him into a cab and sent him on his way. And Adarsh made it to the station by the skin of his teeth, with seconds to spare for the scheduled departure time. Only to find there was no sign of the train he was supposed to catch. Sure that the train was late, he marched straight to the station master wanting to know how late the train was going to be. "What are you talking about? That train leaves at 10 pm!" says the station master. "But my ticket says 7 p.m.," said Adarsh.

The puzzled station master asked to see his ticket and burst out laughing…the time printed on the ticket was the time of booking! With the fine print saying that the train timings had changed effective July 1 and that the passenger should check the new schedules. Both had a hearty laugh. With over 3 hours for the train to leave and nothing to do, Adarsh struck up a friendship with the station master and passed time. We, of course, will not talk about the berating some people got for landing him in that situation. All we'll say is that Adarsh is not one to miss the bus, or the train…

## Adarsh meets Adarsh

But that's not the end of Adarsh's experiences. In Bangalore at Planet Digit, Adarsh struck up a friendship of a different sort.

Among the throngs of visitors, he came across a young lad, all of 14 years, and coincidentally also named Adarsh. The two hit it off right away and the younger namesake was taken under the wing by the 'elderly 25-year-old' Adarsh. Now 14-year-old Adarsh is a big fan of India's favourite technology magazine and was keen to meet everybody associated with Digit. So he was introduced to the rest of the team members present at the event. Everybody was much taken by the young guy's enthusiasm and love for Digit and he was treated like one of the family throughout the day. But the depth of his attachment to Digit was brought home only when the day came to an end and it was time to pack up. Young Adarsh literally had tears in his eyes, when the good byes were being said. And his older namesake, who we must add is never at a loss for words, was extremely touched, as was everybody else.



Need we say who's who—Adarsh with Adarsh

# Modem woes

Having to dial repeatedly when you want to get online can be a real pain in the neck. But guess who's more irritated than you are? Your modem! If it

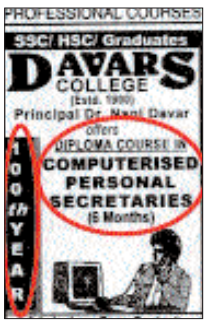


could speak it would let you know—and maybe this is what it would say.

*Contributed by: D. Bose, via e-mail*

# Secretaries 2.0

What's the best way to avoid work? Get yourself a secretary! And what's even better? A computerised secretary! Question is—do you have to pay them?!




## Your chance to BACKBYTE!

*Highlight the lighter side of computing. Mail your contributions to* Backbyte
Digit, Plot D-222/2,
TTC Industrial Area, MIDC,
Shirvane, Nerul,
Navi Mumbai 400 706
*or send e-mail to*
**backbyte@jasubhai.com**

# Bottom of the Charts

Overcome by connectivity hassles, Kamil Merchant takes poetic licence:

*Socho kabhi aisa ho to kya ho...*
*Bahar se koi mail na aa sake*
*Andar se koi data na ja sake*
*Socho kabhi aisa ho to kya ho*
*Socho kabhi aisa ho to kya ho*
*Hum Tum ek Network pe logged ho*
*Aur Server Down ho jaye*
*Resources se Kaho ke NT chod de*
*Unix lay aai*
*Hum Tum .....*
*Aage hai 4GL ka mela ...*
*Baba Mujhe Dar Lagta Hai*
*Peeche hai Cobol ka Thela- ... Hmm.*
*Kyon Dara rahe ho*
*Aage hai 4GL ka mela*
*Peeche hai Cobol ka Thela*
*US bhi jana hai mushkil*
*Bench pe rahana bhi mushkil*
*Socho kabhi aisa ho to kya ho*
*Socho kabhi aisa ho to kya ho*
*Hum Tum Solitair khel rahe ho*
*Aur Page Fault Aa jaye..*
*Hum Tum...*

## RETRO

### UNIVAC

The Universal Automatic Computer (UNIVAC) was developed between 1946-51 to do tabulation work for the US Census Bureau. While it was seen as a Godsend in government circles, it was not until the US presidential election of 1952 that it made its universal claim to fame.

While the results were being processed at the election headquarters, the media had submitted data to the UNIVAC asking it to predict the outcome. The resulting printout informed them that Eisenhower would win. But the newscasters, unwilling to present a result that they found unbelievable, broadcast that even the machine was "stumped" on this issue. It was a sheepish newscaster who later appeared on TV to inform audiences that UNIVAC had indeed predicted the election correctly, but the news media had been unwilling to stake their reputation on the machine's calculations.

# Readers Rants

## Long Gone

Here's an old advertisement for a so called 'most powerful computer ever'! How powerful? Well, 20 MHz Intel




80386 Microprocessor, VGA graphics card, 2MB RAM, 16 MB capacity! Boy, oh boy! Have we come a long way!

*Contributed by: Mikhail Esteves, via e-mail*

## Hardware Engineer doing time!



Throw a hardware engineer in jail. Give him a loaf of bread, a knife and all the time in the world. And what do you get? This!

*Contributed by: Manu Khanna, via e-mail*




## Done to death!

The next time you smell a rat at work, it's probably a mouse! No, not the four legged kind, but the one on your table connected to your desktop. This little guy does do a lot of work…and here's proof of what could happen if you overwork him.

*Contributed by: Ramanujam, via e-mail*